SOFTWARE OPERATING GUIDE

Software Version 4.57.0.0

Pro 1200
Patriot® 50 Series

Precision Farming and Guidance

Part number 92277712
1st edition English
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CASE

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Manual scope

This software operating guide covers precision farming and guidance operation with the **Pro 1200** display in your vehicle.

This software operating guide does not cover general display usage or vehicle functions such as Heating, Ventilation, and Air Conditioning (HVAC) or automatic axle adjustment setup. You should read the vehicle operator's manual to fully understand basic machine operation before you read this software operating guide.

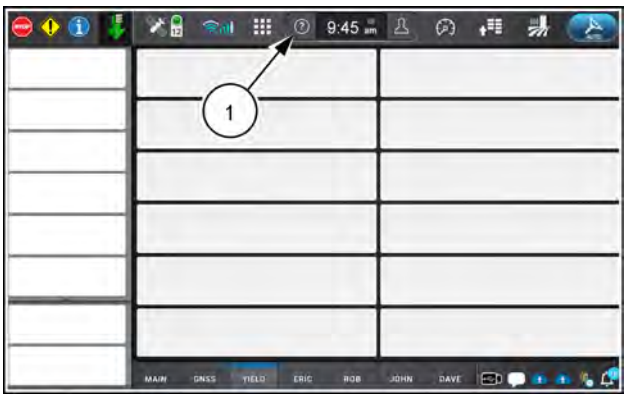
This software operating guide also covers basic setup and troubleshooting of your Global Satellite System Navigation (GNSS) system.

This manual is organized so that an operator can quickly begin using the precision farming, autoguidance, and telematics applications.

This manual contains setup and calibration instructions for the installed features on your vehicle. However, your display was configured at the factory with the settings for your machine. You or your CASE IH dealer may need to perform setup and calibrations in some cases, so the instructions for doing so are given in this manual.

Help and information

To access the "Help" screen, press the question mark icon **(1)**. The “Help” screen opens.



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The "Help" screen provides access to additional information, such as:

- Manuals in Portable Document Format (PDF) for the vehicle, display, implements, or precision farming operations
- Videos for operation or maintenance of your machine
- Contact information for your servicing dealer
- Information about run screen windows and the display layout.

From the “Help” screen:

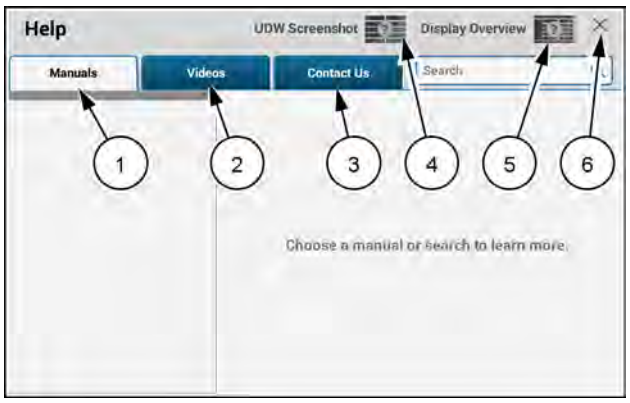
Press the “Manuals” tab **(1)** to view the available manuals on the display.

Press the “Videos” tab **(2)** to view the available videos on the display.

Press the “Contact Us” tab **(3)** to view contact information for your servicing dealer.

Press the “UDW Screenshot” icon **(4)** to open the UDW screenshot screen, featuring information buttons for the UDW’s in the selected run screen.

Press the “Display Overview” icon **(5)** to open the display overview” screen featuring a grayed-out run screen with active informational buttons.



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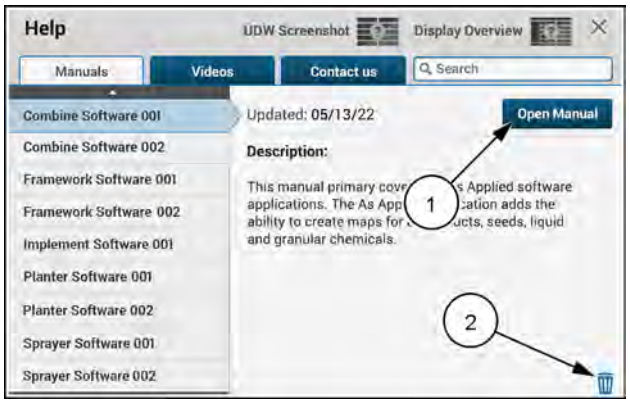
Press the “X” button **(6)** to close the "Help" screen.

“Manuals” tab

The “Manuals” tab is split into two halves. The left half lists the different manuals that are available for review. By default, the first item in the list is selected. Scroll up and down the list, as needed, to locate the desired manual. Press the desired manual to select it.

The right side provides additional information about the selected manual. Press the “Open Manual” button **(1)** to open the manual in a Portable Document Format (PDF) viewer. Press the trash can icon **(2)** to delete the manual from the list.



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Scroll through the document as needed. When finished with the PDF, press the “X” button **(4)** to close the PDF viewer and return to the “Manuals” tab.

NOTE: *Hyperlinks are not active in the PDF viewer.*

A “Search” field **(3)** is located at the top of the PDF viewer. To search the PDF:

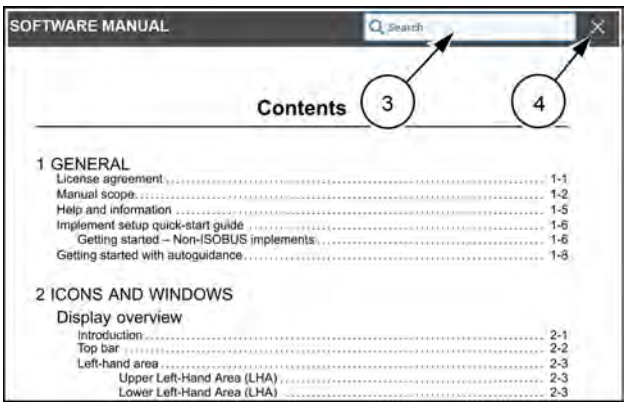
1. Press the “Search” field. A keyboard **(5)** opens.
2. Populate the “Search” field with a word or phrase of interest.

   NOTE: *Press the “Search” field “X” button **(6)** to cancel the search process and return to the document.*
3. Press the “Search” button **(7)** to start the search process.

   NOTE: *Search progression **(8)** is displayed as “the number of pages searched / the total number of pages in the document.”*
4. Press the arrows **(9)** to navigate through the matches as needed.

   NOTE: *When search results are displayed, the page indicator **(10)** displays the page location of the highlighted match.*

NOTE: *When available, use the table of contents to locate a topic of interest. To quickly navigate to the page, enter the page number when doing Step 2 and continue the search as described.*



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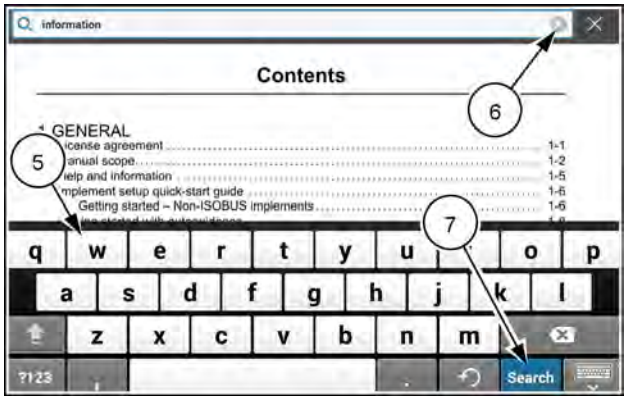

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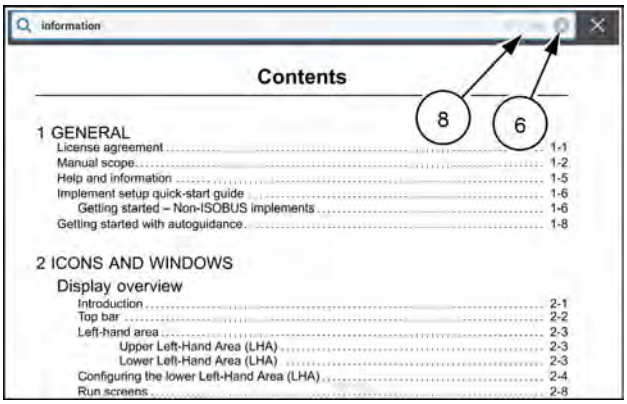

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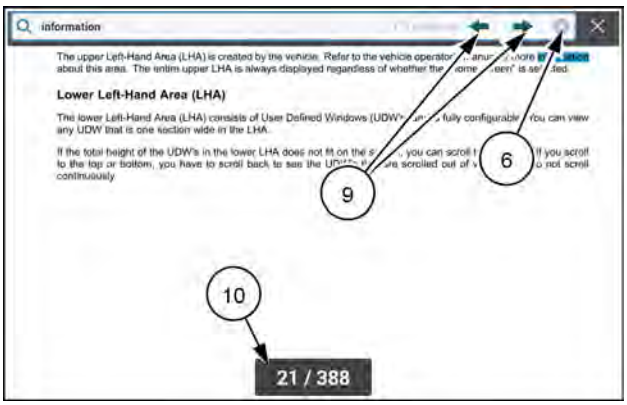

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“Videos” tab

The “Videos” tab is split into two halves. The left half lists the different video categories that are available for review. By default, the first item in the list is selected. Scroll up and down the list, as needed, to locate the desired video category. Press the desired video category to select it.

The right side provides a list of videos concerning the selected video category. Press the film recorder button **(1)** to open the selected video in a video player. Press the trash can button **(2)** to delete the video from the list.

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When the video player is opened, the selected video begins to play. When the video is done, the option to replay the video is provided. Press the “Replay” icon to replay the video. When finished watching the video, press the “X” button in the top right corner to close the video player.

“Contact Us” tab

The “Contact Us” tab is split into two halves. The left half lists the different categories that are available for review. By default, the first item in the list is selected.

The right side provides additional information about your dealer. Each field can be modified as needed by the operator. Press the “Edit” button **(1)** to modify the information.

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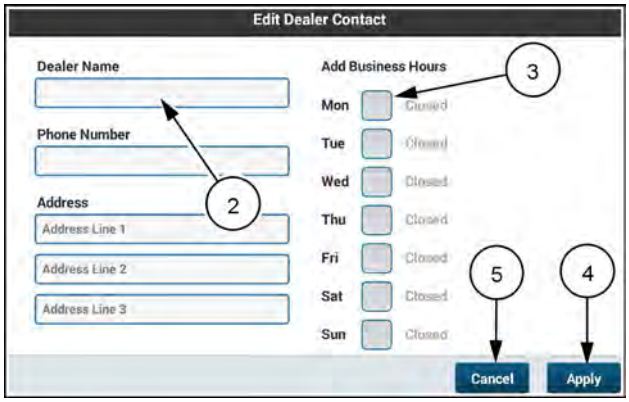
Press a field **(2)** to modify the information. To set the business hours, press the check box **(3)** and define the time.

Press the “Apply” button **(4)** to finalize and view the updated “Contact Us” information.

NOTE: *Press the “Cancel” button* ***(5)*** *at any time before pressing the “Save” button to terminate the editing process.*



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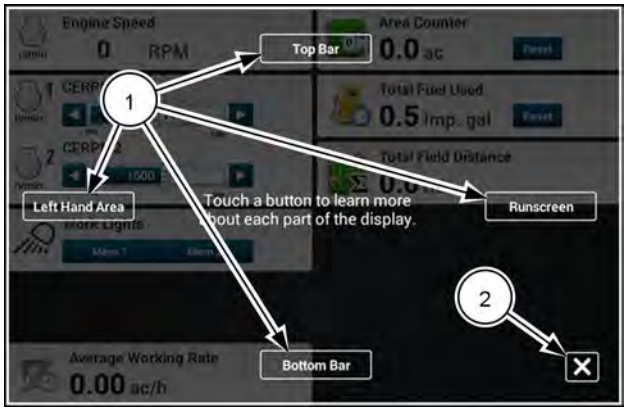
“Display Overview” screen

The “Display Overview” screen displays four navigational buttons **(1)** containing text for the four main areas of the display. Press a navigational button to open a new screen that contains informational buttons for the components of the selected area.

Press the “X” button **(2)** to close the “Display Overview” screen.



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Press the navigational button to open another screen about the described component. Press an informational button area to view more information about the component described. Press the “Back” button **(5)** to return to the “Display Overview” screen. Press the “X” button **(6)** to close the screen.

NOTE: *The “Top Bar” screen contains both callouts* ***(3)*** *and informational buttons* ***(4)****. The callouts are used to indicate the location of the items being described.*

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Applicator setup quick start guide

Getting started – ISOBUS applicators

NOTE: *Review the safety information in the "Safety Information" chapter of this manual and in your vehicle operators manual.*

1. Start the sprayer.
2. Customize the run screen for your operation. By default, the run screens are set up with the following recommended windows:

NOTE: *You can also rename the run screen buttons as needed for your operation.*

Run screen	User-Defined Window (UDW)
1	Map (1x3) Product Control (1x2) Swath Number
2	Boundary Control Overlap Control Remark Nudge
3	Map (2x6)
4	Universal Terminal (2x6) (default)
5	Fuel Economy Foam Control
6	Average Working Rate Average Working Speed Product Area Applied Area Counter Trip Time In Work Average Fuel Economy Trip Time Idle Average Fuel Economy In Work Fuel Used
7	Camera (2x6)

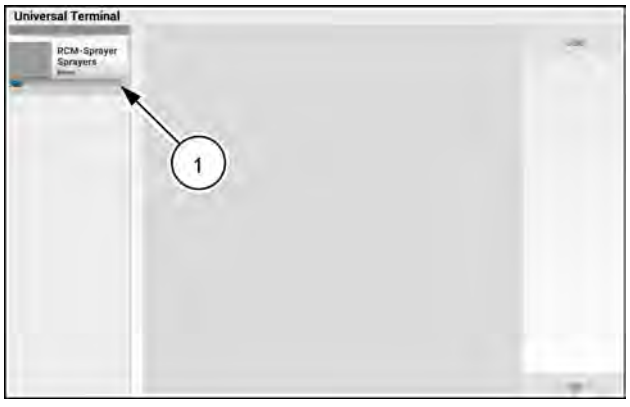
NOTE: *For information on creating run screens, see "Customizing the run screens" (**3-13**).*

Add other windows to your run screens, as desired.

4. Go to Run Screen 4. Allow the object pools **(1)** to load.

   NOTE: *Loading the object pool for the first time may take several minutes. When you use the applicator at a later time, the display will recall the object pool from memory if the ISOBUS applicator software has not changed.*

When the object pools are loaded, perform any required setup as required by the ISOBUS software. For more information, see the ISOBUS software operator's manual.



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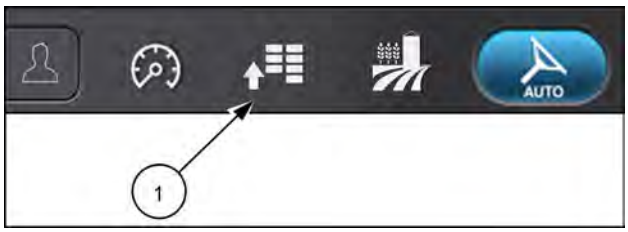
5. Press the button **(1)** to open the “Menu” screen. Press the “Settings” tab, if necessary.



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6. Select the “Applicator” card to confirm that the proper applicator information is displayed. Open the tabs on the right-hand side of the screen and review the information. When finished, use the “Menu” button to go back. See “Applicator” card” (**4-63**).

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7. Select the “Sprayer” card to confirm the vehicle configuration. When finished, press the “Menu” button to return to the “Menu” screen.

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8. Select the “Vehicle/Applicator Configuration” card to set the work switch source, which is dependent on the applicator. See “’Sources’ screen” (**4-72**) for detailed information on selecting the work switch source. On this screen, you also select the system speed source priority. When finished, press the “Menu” button to return to the “Menu” screen.

RAPH21PLM1098AA 5

9. Select the “Work Condition” card. Open the tabs on the right-hand side of the screen to configure the product and overlap settings. For more information, see “Work Condition card” (**4-75**).

RAPH21PLM1113AA 6

10. Use the AFS Connect™ farming application to send setup data to your vehicle.

NOTE: *AFS Connect™ requires a Basic or Advanced telematics subscription. Alternatively, use a USB memory stick to transfer setup data to your display.*

Press the “Data” card to open the “Data Management” screen. Use these screens to import the setup data for your operation.

NOTE: *For more information, see “Importing data” (**7-14**).*

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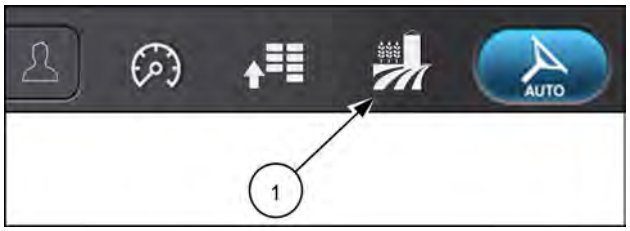
11. Select your grower, farm, field, task, and applicator information.

Press the “Operations” button **(1)** on the top bar to access your grower, farm, field, and task information.



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If you do not yet have a grower, farm, or field defined:

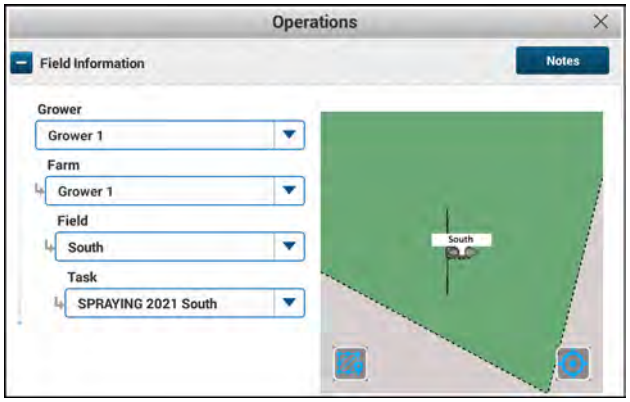
A. Press the “Operations” button **(1)** to access the “Operations” screen.

B. Add the Grower.

C. Add the Farm.

D. Add the Field.

NOTE: *The “Task” will be automatically created.*



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Swipe up with one finger to scroll down on the “Operations” screen.

RAPH21PLM1237AA 10

Scroll through and verify the selections on the “Operations” screen.

E. Verify applicator selection and guidance configuration.

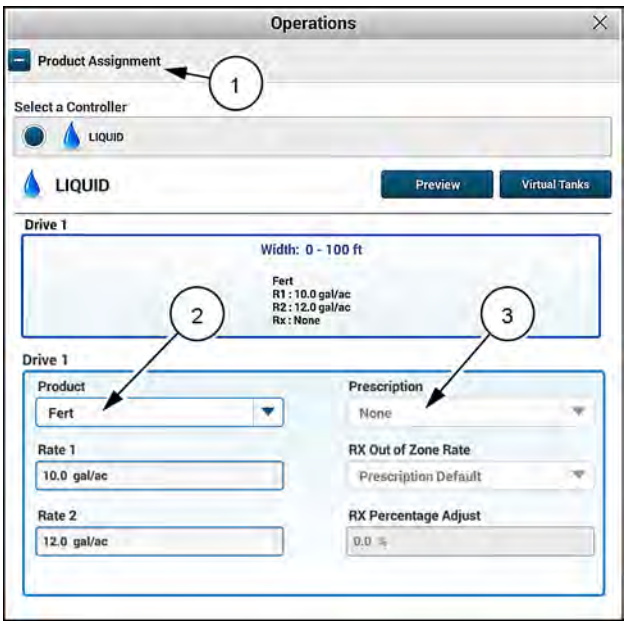
F. Scroll through and verify the selections on the “Operations” screen.

NOTE: *To create applicator configurations, see “Applicator settings” (**4-64**).*

NOTE: *To create guidance configurations, see ‘”Guidance” screen’ (**4-48**).*

Scroll down again and expand the “Product Assignment” section. Select your controller **(1)**, and then assign the product **(2)** and prescription **(3)** (if necessary) to the controller.

If you are operating with more than one controller, select each additional controller, and repeat the process.



RAPH21PLM1106AA 11

14. Go to Run Screen 3 and confirm that your coverage layer or “as-applied” application layer is being created on the map.

    NOTE: *For more information on map layers, see the “PRECISION FARMING: WORK MAPS AND LAYERS” section (**5-199**).*

On the top bar, the work status indicator **(1)** will depict a green down arrow with a blue logging symbol; this icon indicates that the vehicle and applicator are in work and data is being logged.

RAPH21PLM1112AA 12

Getting started – Non-ISOBUS applicators

1. Start the sprayer.
2. By default, the run screens are set up with the following recommended windows:

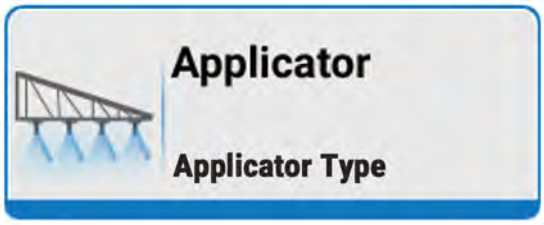
NOTE: *You can rename the run screen buttons as needed for your operation.*

Run screen	User-Defined Window (UDW)
1	Map (1x3) Product Control (1x2) Swath Number
2	Boundary Control Overlap Control Remark Nudge
3	Map (2x6)
4	Universal Terminal (2x6) (default)
5	Fuel Economy Foam Control
6	Average Working Rate Average Working Speed Product Area Applied Area Counter Trip Time In Work Trip Time in Task Average Fuel Economy Trip Time Idle Average Fuel Economy In Work Fuel Used
7	Camera (2x6)

NOTE: *For information on creating run screens, see "Customizing the run screens" (**3-13**).*

Configure other run screens with additional windows, as desired.

3. Press the "Menu" button on the top bar to navigate to the "Menu" screen. Press the "Settings" tab, if necessary.
   A. Select the "Applicator" card and create or select your applicator. Open the tabs on the right-hand side of the screen and populate the information related to applicator measurements and application controllers, if necessary. When finished, press the "Menu" button to return to the "Menu" screen. See "Applicator card" (**4-63**).
   B. Confirm the vehicle and applicator configuration in the "Operations" screen. When finished, press the "Menu" button to return to the "Menu" screen.



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C. Select the “Sprayer/Applicator Configuration” card **(3)**.Verify that the work switch source is set to your desired selection. If needed, set the system speed source priority selection.

NOTE: *The work switch source and system speed source priority do not typically require changes.*

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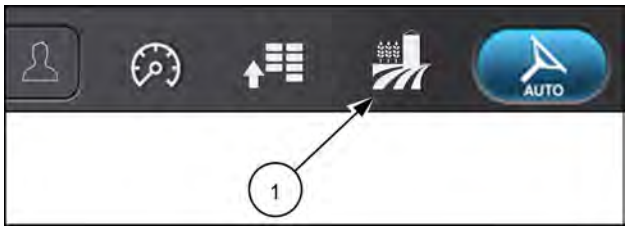
4. Select your grower, farm, field, and task.

Press the “Operations” button **(1)** on the top bar to access your grower, farm, field, and task information.



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If you do not yet have a grower, farm, or field defined:

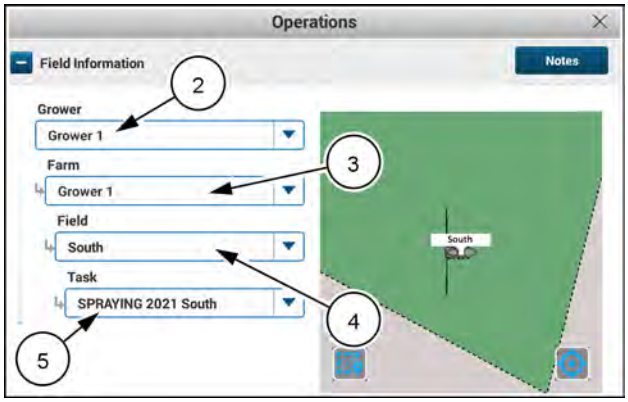
A. Press the “Operations” button **(1)** to access the “Operations” screen.

B. Add the Grower **(2)**.

C. Add the Farm **(3)**.

D. Add the Field **(4)**.

NOTE: *The “Task” **(5)** will be automatically created.*



RAPH21PLM1105AA 16

Swipe up with one finger to scroll down on the “Operations” screen.

RAPH21PLM1237AA 17

E. Verify the applicator selection and guidance configuration.

F. Scroll through and verify the selections on the “Operations” screen.

NOTE: *To create applicator configurations, see “Applicator settings” (**4-64**).*

NOTE: *To create guidance configurations, see “’Guidance’ screen” (**4-48**).*

5. Go to Run Screen 3 and confirm that your coverage layer is being created on the map.

NOTE: *For more information on map layers, see the “PRECISION FARMING: WORK MAPS AND LAYERS” section (**5-199**).*

On the top bar, the work status indicator **(1)** will depict a green down arrow with a blue logging symbol; this icon indicates that the vehicle and applicator are in work and data is being logged.

RAPH21PLM1112AA 18

Getting started with autoguidance

GNSS initialization

NOTE: *Review the safety information in the "Safety Information" chapter of this manual and in your vehicle operators manual.*

You must allow the GNSS system on the vehicle to fully initialize to provide the expected accuracy for your operation.

As the system initializes, monitor the GNSS status from the "GNSS Status" screen (by pressing the satellite icon on the top bar) or from the status icons on the bottom bar. For additional information regarding the GNSS statuses, see "'Status' screen" (**3-26**).

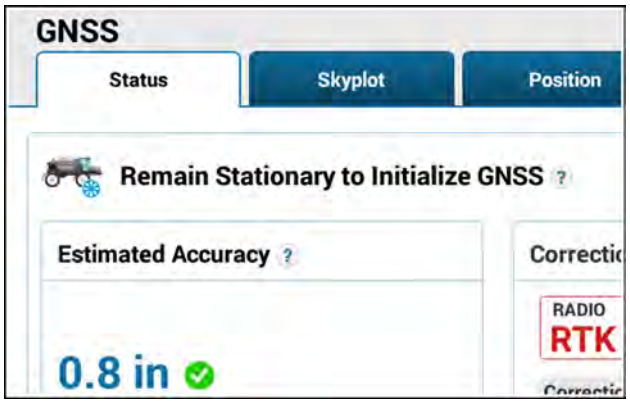
Before starting the vehicle, make sure that the GNSS receiver is secured in the proper location and orientation on the cab roof.

Remain Stationary to Initialize GNSS

Before driving the vehicle, allow the system to first perform the stationary phase of initialization.

Start the engine, but do not move the vehicle while the display and GNSS system is powering on. While the vehicle is stationary, the GNSS system begins the initialization process. In most cases, the system completes this step by the time the display is fully powered on.

NOTE: *Although the AFS correction sources will begin converging, you cannot determine the level of convergence based on the estimated accuracy value until the GNSS system is fully initialized.*



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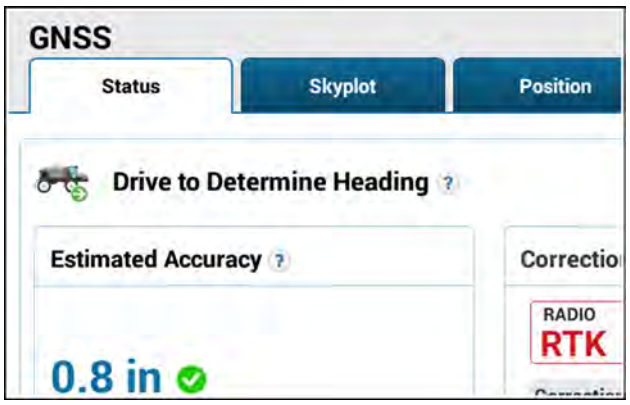
Monitor the status of the GNSS system as the initialization process progresses. Keep the vehicle still until the "Remain Stationary to Initialize GNSS" message is no longer shown on the display.

Drive to Determine Heading

When the GNSS status changes to "Drive to Determine Heading", you may move the vehicle.

Speed up or slow down to allow the system to determine the heading. Turn the sprayer, if possible. Stop the sprayer and monitor the GNSS status.

NOTE: *Avoid making slow or small movements, as this will extend the amount of driving that is required to determine the vehicle heading.*



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Drive as Desired

When the GNSS system is fully initialized, the estimated accuracy **(1)** will improve to the expected values for your correction source.

NOTE: *Due to the nature of the GNSS system, you may notice that the accuracy may improve or degrade after the system is fully initialized, depending on driving or satellite conditions.*

At this point, you may drive the vehicle and engage auto-guidance if the estimated accuracy is within the threshold of the defined accuracy range for your correction source.

NOTE: *If the estimated accuracy is not within the defined threshold, allow your correction source to converge or adjust the accuracy thresholds for your current operation. See "Accuracy setup" (**4-35**) for more information.*

Perform all GNSS setup operations as outlined in the "GNSS and guidance setup" chapter (**4-3**).

To begin using autoguidance:

1. Setup your field and vehicle information.

Press the "Operations" button **(1)** on the top bar to access your grower, farm, field, and task information.

Select the proper grower, farm, and field for operation. Create a new task, if desired.

Swipe up with one finger to pan down on the "Operations" screen.

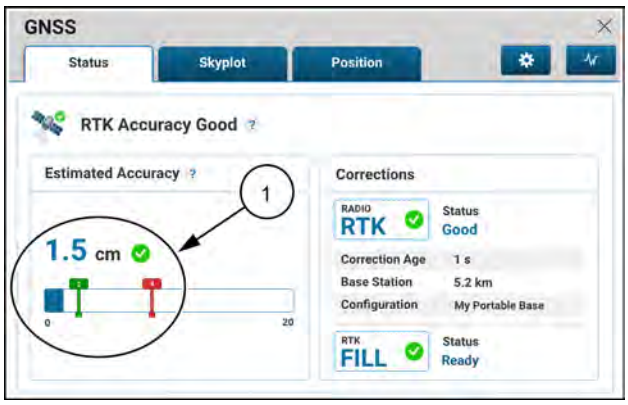
Select your vehicle, applicator, and vehicle applicator configuration **(1)**.

NOTE: *To create applicator configurations, see "Applicator settings" (**4-64**).*

Select your guidance configuration **(2)**.

NOTE: *To create guidance configurations, see "'Guidance" screen' (**4-48**).*

If you have not yet setup your applicator, see "Applicator setup quick-start guide" (**1-6**) on the preceding pages for applicator setup information.



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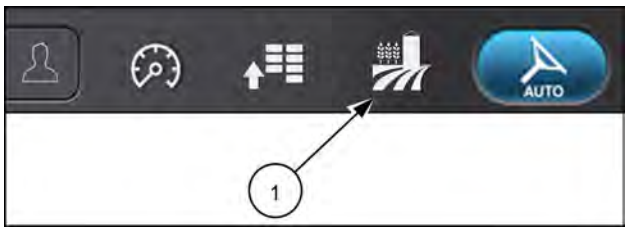

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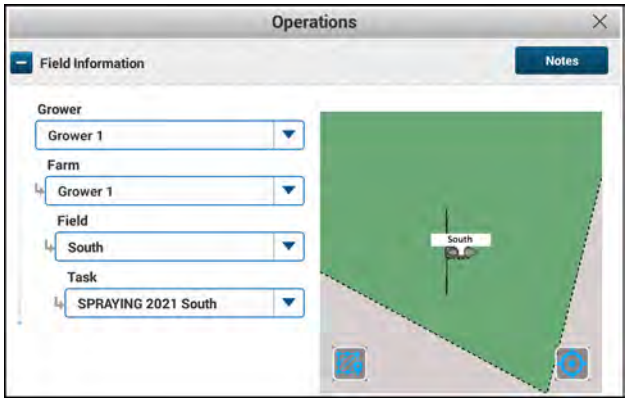

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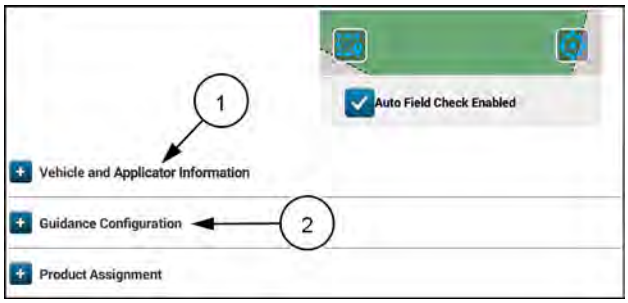

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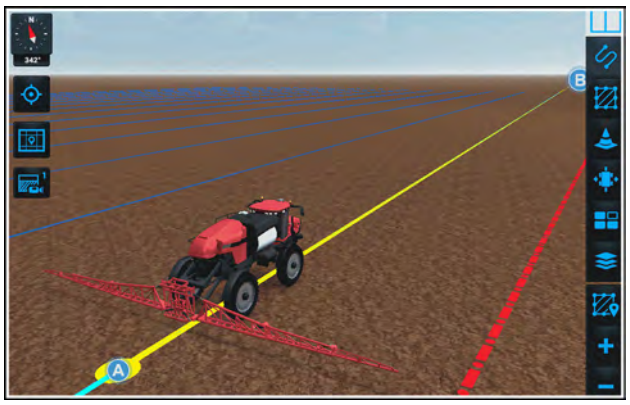
2. Record your swath line. You also have the option to record your field boundary at this time.

NOTE: *Alternatively, use already-created field boundaries and guidance lines, import the lines from a USB memory device, or send the data to the vehicle from the AFS Connect™ portal. See "Importing data" (**7-14**).*

For specific information regarding boundary and swath creation, see the "FIELD MAPPING" section (**5-2**).



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Make sure that all of the conditions for engagement are satisfied. See "Conditions for engagement" (**5-95**).

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3. Guidance engagement status

The guidance engagement status icon appears blue when the guidance is ready to engage. Use the guidance engagement switch in the cab to start autoguidance operation.

The guidance engagement status icon appears green when guidance is engaged.

If the icon is gray, the conditions for engagement have not been met. Press a guidance engage switch in the cab to view the reasons why the system cannot engage.

2 - SAFETY INFORMATION

Safety rules

Personal safety

This is the safety alert symbol. It is used to alert you to potential personal injury hazards. Obey all safety messages that follow this symbol to avoid possible death or injury.

Throughout this manual and on machine safety signs, you will find the signal words DANGER, WARNING, and CAUTION followed by special instructions. These precautions are intended for the personal safety of you and those working with you.

Read and understand all the safety messages in this manual before you operate or service the machine.

⚠ DANGER indicates a hazardous situation that, if not avoided, will result in death or serious injury. The color associated with DANGER is RED.

⚠ WARNING indicates a hazardous situation that, if not avoided, could result in death or serious injury. The color associated with WARNING is ORANGE.

⚠ CAUTION indicates a hazardous situation that, if not avoided, could result in minor or moderate injury. The color associated with CAUTION is YELLOW.

FAILURE TO FOLLOW DANGER, WARNING, AND CAUTION MESSAGES COULD RESULT IN DEATH OR SERIOUS INJURY.

Machine safety

NOTICE: *Notice indicates a situation that, if not avoided, could result in machine damage or property damage. The color associated with Notice is BLUE.*

Throughout this manual you will find the signal word Notice followed by special instructions to prevent machine damage or property damage. The word Notice is used to address practices not related to personal safety.

Information

NOTE: *Note indicates additional information that clarifies steps, procedures, or other information in this manual.*

Throughout this manual you will find the word Note followed by additional information about a step, procedure, or other information in the manual. The word Note is not intended to address personal safety or property damage.

Safety

NOTICE: *Follow the operation and safety instructions included with the sprayer and read this manual carefully before operating this system.*

- Follow all safety information presented within this manual and the sprayer operator's manual. Review sprayer operation with your local dealer.
- Contact a local CASE IH dealer for assistance with any portion of the installation, service, or operation of this equipment.
- Follow all safety labels affixed to system components. Be sure to keep safety labels in good condition and replace any missing or damaged labels. Contact a local CASE IH dealer to obtain replacements for safety labels.

Observe the following safety measures when operating the system:

- Do not operate this system or any agricultural equipment while under the influence of alcohol or an illegal substance.
- Be alert and aware of surroundings and remain in the operator seat at all times when operating this system.
  - Disable this system before exiting the operator seat.
  - Determine and remain a safe working distance from obstacles and bystanders. The operator is responsible for disabling the system when a safe working distance has diminished.
  - Disable this system prior to starting any maintenance work on the components of this system.
- Do not attempt to modify or lengthen any of the system control cables. Extension cables are available from a local CASE IH dealer.

Displays and control consoles

- If the display will not be used for an extended period, it is best to remove the display from the machine and store it in a climate controlled environment. This may help to extend the service life of electronic components.
- To prevent theft, secure the display and GPS antenna when leaving the machine unattended.

Agricultural chemical safety

Follow all federal, state, and local regulations regarding the handling, use, and disposal of agricultural chemicals, products, and containers. These include but are not limited to pesticides, herbicides, and fertilizer. Triple-rinse and puncture or crush empty containers before properly disposing of them. Contact a local environmental agency or recycling center for additional information.

- Always follow safety labels and instructions provided by the chemical manufacturer or supplier.
- Always wear appropriate personal protective equipment as recommended by the chemical and/or equipment manufacturer.
- When storing unused agricultural chemicals:
  - Store agricultural chemicals in the original container and do not transfer chemicals to unmarked containers or containers used for food or drink.
  - Store chemicals in a secure, locked area away from human and livestock food.
  - Keep children away from chemical storage areas.
- Fill, flush, calibrate, and decontaminate chemical application systems in an area where runoff will not reach ponds, lakes, streams, livestock areas, gardens, or populated areas.
- Follow all label instructions for chemical mixing, handling, and disposal.
- Avoid direct contact with agricultural chemicals or inhaling chemical dust or spray particulate. Seek immediate medical attention if symptoms of illness occur during, or soon after, use of agricultural chemicals or products.
- After handling or applying agricultural chemicals:
  - Thoroughly wash hands and face after using agricultural chemicals and before eating, drinking, or using the restroom.
  - Thoroughly flush or rinse equipment used to mix, transfer, or apply chemicals with water after use or before servicing any component of the application system.

NOTE: *You can find information about safety standards for agricultural chemicals at https://www.iso.org/standard/70623.html.*

Hydraulic safety

When servicing a hydraulic system or hydraulic components, be aware that hydraulic fluid may be extremely hot and under high pressure. Caution must be exercised.

- Always wear appropriate personal protective equipment when installing or servicing hydraulic systems.
- Never attempt to open or work on a hydraulic system with the implement running.
- Any work performed on the hydraulic system must be done in accordance with CASE IH approved maintenance instructions. For assistance, see your CASE IH dealer.
- Care should always be taken when servicing or opening a system that has been pressurized.
- The sprayer must remain stationary and switched off with booms or implement sections unfolded and supported during installation or maintenance.
- Take precautions to prevent foreign material or contaminants from being introduced into the sprayer hydraulic system. Contaminants that are able to bypass the hydraulic filtration system will reduce performance and may damage hydraulic components.
- Stand clear of hydraulically-powered equipment when starting the system for the first time after installing or servicing hydraulic components in case a hose has not been properly connected or tightened.

Caution

Electrical safety

- Always verify that power leads are connected to the correct polarity as marked. Reversing the power leads could cause severe damage to any of the electrical systems or other components.
- Never attempt to open or work on an electrical system with the sprayer running.
- To prevent personal injury or fire, replace defective or blown fuses with only fuses of the same type and amperage.
- Do not connect the power leads to the battery until all system components are mounted and all electrical connections are completed.
- Always start the machine before initializing this system to prevent power surges or peak voltage.
- To avoid tripping and entanglement hazards, route cables and harnesses away from walkways, steps, grab bars, and other areas used by the operator or service personnel when operating or servicing the equipment.

Touch screen

- Only touch the touch-screen with your finger or by using a special touch-screen stylus/pen. Operating the touch-screen with sharp objects may cause permanent damage to the screen.
- Only clean the screen using a damp cloth. Never use caustic or other aggressive substances.

3 - ICONS AND WINDOWS

Display overview

Introduction

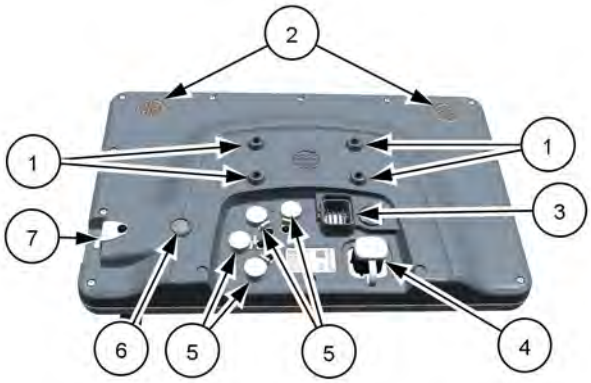
Display overview

The **Pro 1200** display is a **30.5 cm** (**12 in**) high resolution, multi-touch display used for machine control, precision farming, guidance, and connectivity (if equipped) functions on the vehicle.

The **Pro 1200** display features:

- 1280 x 800 pixel resolution
- 16 x 10 aspect ratio for a wider run screen area
- Four independent mini-BNC camera ports
- Optically-bonded screen to minimize glare and reflection
- 1000 NIT brightness for excellent readability in high-ambient light conditions

NHIL20PLM1751AA 1



NHIL20PLM1752AA 2

Item	Description
(1)	[1] Mounting holes (M6 x 1.00)
(2)	Speakers
(3)	Vehicle connector
(4)	[2] USB interface connector
(5)	[3] Camera ports
(6)	[4] Reset button
(7)	USB port

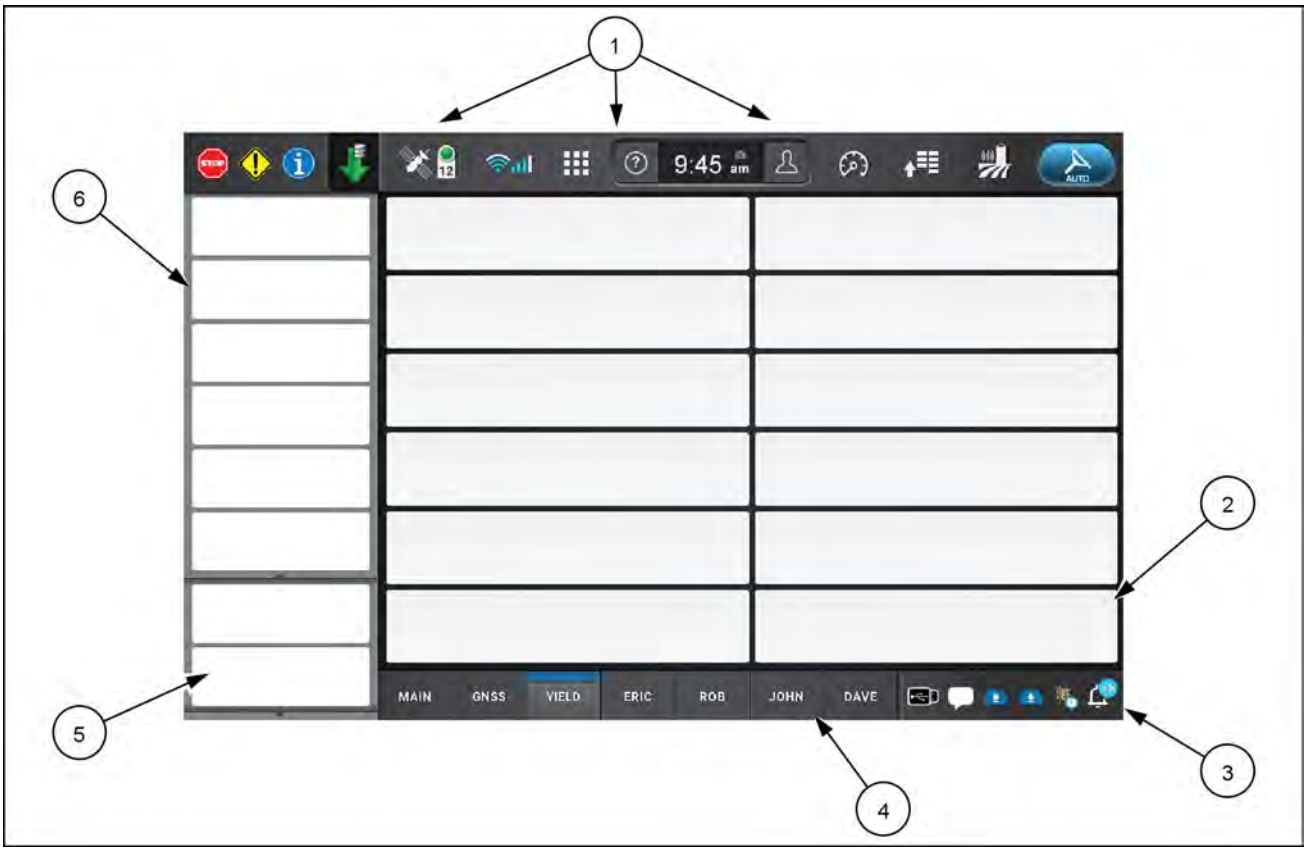
NOTICE: *[1] Do not torque mounting screws more than* ***6 N·m*** *(****53 lb in****).*

NOTE: *[2] This connector contains two USB ports which can be used for auxiliary devices such as a printer, if supported by the vehicle. Please contact your CASE IH dealer for more information.*

NOTE: *[3] The cameras must all be either NTSC or PAL compatible, with a supplied 1.0 Vp-p amplitude (Voltage, peak-to-peak), connected via a mini-BNC coaxial-type connector. The display does not directly accept digital camera inputs.*

NOTICE: *[4] Reset button should NOT be used unless directed by your dealer or authorized CASE IH personnel.*

Display screen layout



RAIL19PLM2006FA 3

NOTE: *This image is for illustration purposes only. Your application my contain different icons and controls.*

The display layout is organized into six main areas:

(1) Top bar

(2) Run screen User-Defined Windows (UDW)

(3) Notification bar

(4) Run screens

(5) Lower Left-Hand Area (LHA)

(6) Upper Left-Hand Area (LHA)

Display and 3D Map navigation

To navigate through the display, reference the following actions:

Pan

Rotate

Zoom in

Zoom out

Map layer

Dual displays

The secondary display in a dual display setup does not launch the vehicle application. The vehicle card in the setup menu screen appears disabled. The primary display is always the display running the vehicle application. The primary display contains all of the vehicle application User Defined Windows (UDW) and vehicle user interfaces for the multi-display system.

Vehicles with dual displays can support multiple Universal Terminal (UT) screens on both displays.

In the setup menu, open the “System” card.

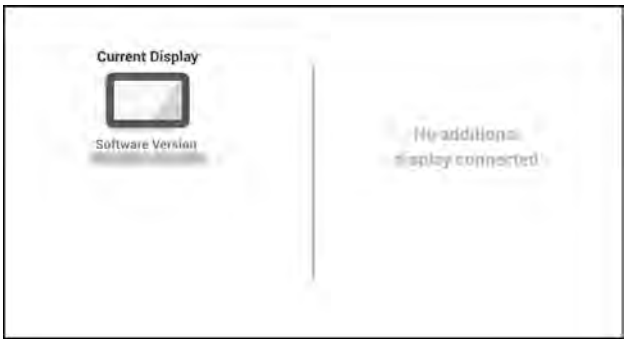
Press the “Multi Display” tab. The “Multi Display” screen opens.

NHIL20PLM0828AA 1

Dual display setup

If the system detects only one display, the “Multi Display” screen shows only the current display.

The area for a second display states, “No additional display connected.”

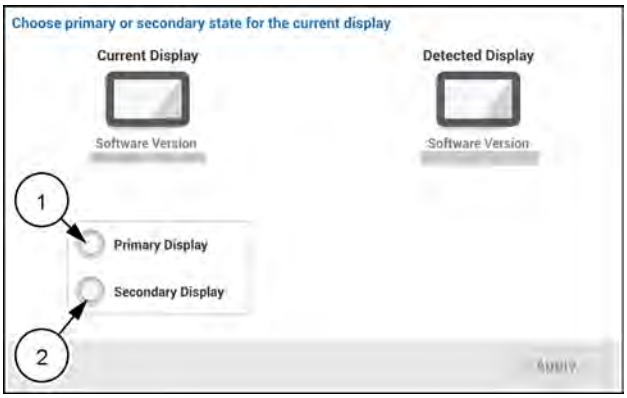


RAPH22PLM1672AA 2

If the system detects two displays and the dual displays have never been set up, the “Multi Display” screen prompts you to assign the displays as primary and secondary displays.

On the display you wish to assign as the primary display, press the “Primary Display” radio button **(1)**.

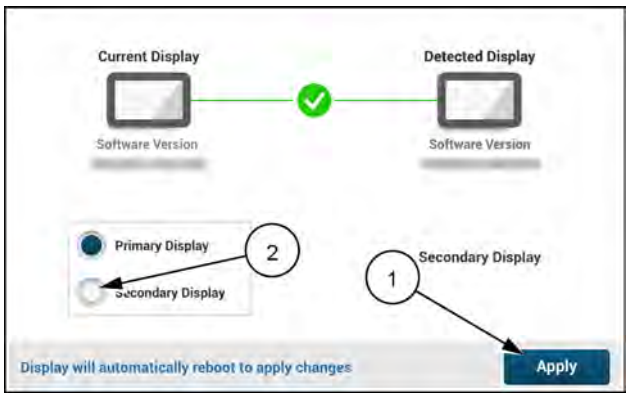
NOTE: *You can also assign one as the secondary display using the “Secondary Display” radio button* ***(2)****.*



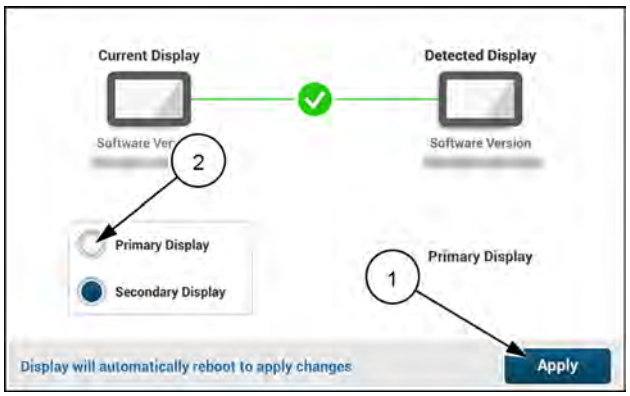
RAPH22PLM1673AA 3

Press the “Apply” button **(1)** to accept your selection.

You can change your selection. Press the radio button **(2)** opposite of the current selection if you wish to change your selection.



RAPH22PLM1674AA 4

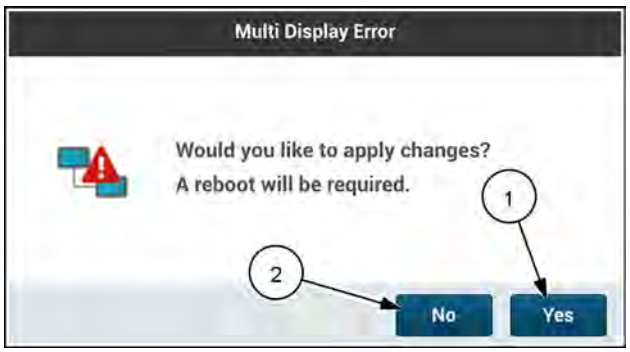


RAPH22PLM1675AA 5

A confirmation window appears. The confirmation window states, “Would you like to apply the changes? A reboot will be required.”

Press the “Yes” button to confirm your selection.

Press the “No” button to decline your selection and return to the “Multi Display” window.



RAPH22PLM1676AA 6

A status window appears. The status window states, “Display will automatically reboot to apply Multi Display changes. This could take a moment.”

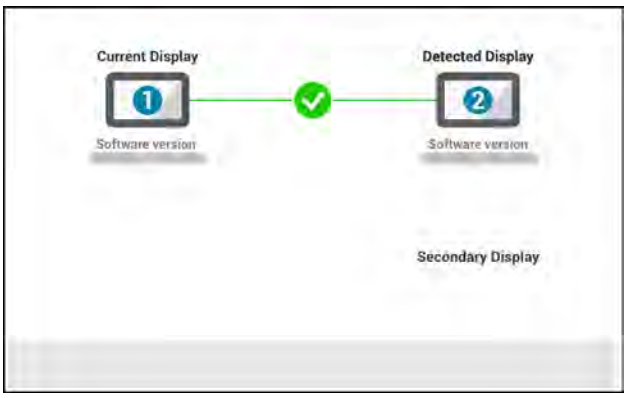
This window clears with no user interaction.

The display reboots.

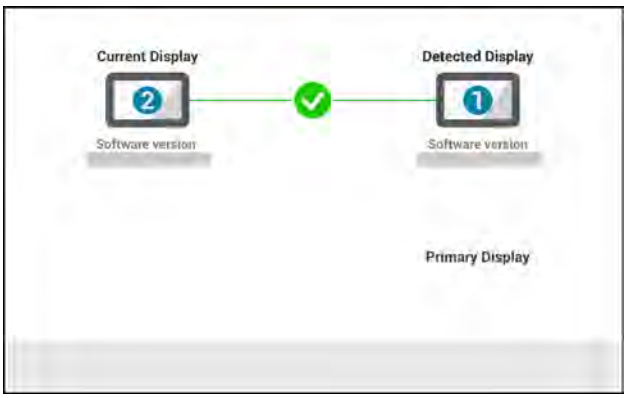
RAPH22PLM1677AA 7

When the display assignment takes affect, the “Multi Display” window displays the assignment.

The number “1” denotes the primary display. The number “2” denotes the secondary display.



RAPH22PLM1678AA 8



RAPH22PLM1679AA 9

Top bar

The top bar provides access to vehicle controls, status, and system settings.

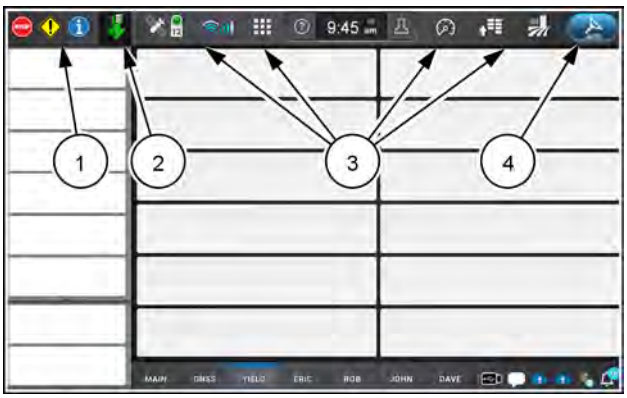
The top bar consists of the following sections:

(1) – Faults and alarms

(2) – Work switch status

(3) – Buttons and menus

(4) – Guidance engage status icon



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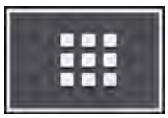
Faults and alarms

Press the faults and alarms area in the top left-hand corner of the screen to access the faults screen.

Top bar button identification

The GNSS top bar icon displays position accuracy status.

The connectivity top bar icon displays the current signal strength of the Wi-Fi and cellular connection.



The Application Manager allows access to individual applications on the display.

The operating status screen displays input and output values for sensors on your machine.

NOTE: *This icon does not appear in some applications.*

The “Menu” screen provides setup and diagnostics for your vehicle, implement, guidance, ISOBUS, connectivity, and work condition.

The “Operations” screen allows you view field information, as well as select your vehicle and work condition.

Access manuals and videos on your display.

Create or modify user profiles.

Guidance engage status icon

NOTE: *This icon is for status purposes only. It is not a button that engages guidance. Use the engage button in your vehicle to engage guidance.*

Autoguidance conditions met. Autoguidance is ready to engage.

Manual control of steering. One or more reasons that guidance cannot be engaged.

Autoguidance is currently active and steering the vehicle.

Autoguidance has not yet been activated.

Work switch status

The work status icon on the top bar indicates the work switch source status, implement work status, and data logging status.

Icon	Work switch source status	Work status	Data logging	Description
	Disabled	Disabled	Disabled	There is no active implement, or the system is in the boot up state.
	Disengaged	Out of work	Off	The work switch is disengaged, such as an implement being raised when the work switch source is set to ”Roading Switch”.
	Disengaged	Out of work	On	The work switch was disengaged, but data logging continues for 30 seconds after going out of work.
	Engaged	In work	On	The work switch is engaged and the implement is in work, but ground speed is zero. Data logging continues for 30 seconds from when the vehicle was moving.
	Disengaged	Out of work	Off	The work switch is disengaged, and the task is paused. No data is being logged.
	Engaged	Out of work	Off	The work switch is engaged, but the implement is out of work or the ground speed is zero. No data is being logged. ***NOTE:*** *The arrow will appear gray and pointing down if the work switch source is set to “none” and the implement is not in work.*
	Engaged	Out of work	Off	The work switch is engaged, ground speed is zero, and the task is paused. No data is being logged.
	Disengaged	Out of work	On	The work switch is disengaged, the ground speed is zero, and the task is paused. Data is being logged.
	Engaged	Out of work	On	The work switch is engaged, the ground speed is zero, and the task is paused. Data is being logged.
	Disengaged	In work	Off	The work switch is not engaged and the task is paused, but the implement is still applying a rate for application control. No data is being logged.
	Disengaged	In work	On	The work switch is not engaged and the implement is still applying a rate for application control. Data is being logged.
	Engaged	In work	On	The work switch is engaged, and data is being logged.
	Engaged	In work	Off	The work switch is engaged, the task is paused, and the implement is applying a rate for application control. No data is being logged.
	Disengaged	In work	On	The work switch is disengaged, the task is paused, and the implement is still applying a rate for application control. Data is being logged.
	Engaged	In work	On	The work switch is engaged and the implement is applying a rate for application control, but the task is paused. Data is being logged.

Left-hand area

The Left-Hand Area (LHA) of the screen is always visible regardless of the selected screen.

Left-Hand Area (LHA)

The Left-Hand Area (LHA) consists of User-Defined Windows (UDW's) and is fully configurable. You can view any UDW that is one section wide in the LHA.

If the total height of the UDW's in the LHA does not fit on the screen, you can scroll to see them. If you scroll to the top or bottom, you have to scroll back to see the UDW's that are scrolled out of view. They do not scroll continuously.

Configuring the lower Left-Hand Area (LHA)

New displays have a default set of windows in the lower Left-Hand Area (LHA). The default set of windows is determined by the vehicle model.

You can add and remove the windows to configure the lower LHA to suit your operations.

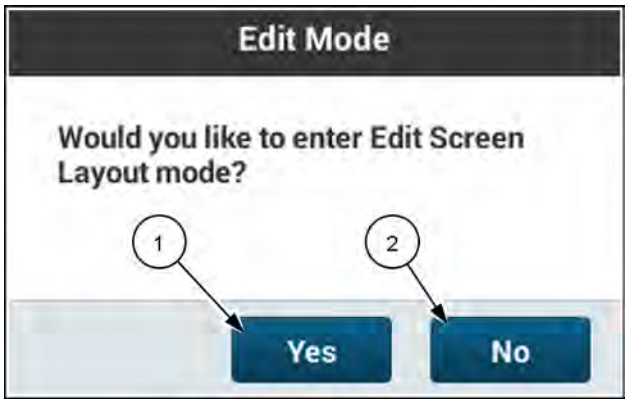
To customize the lower LHA on the display:

Add a new window

Long-press a run screen button. A dialog appears asking if you wish to enter layout editing.

Press the “Yes” button **(1)** to enter the layout editor.

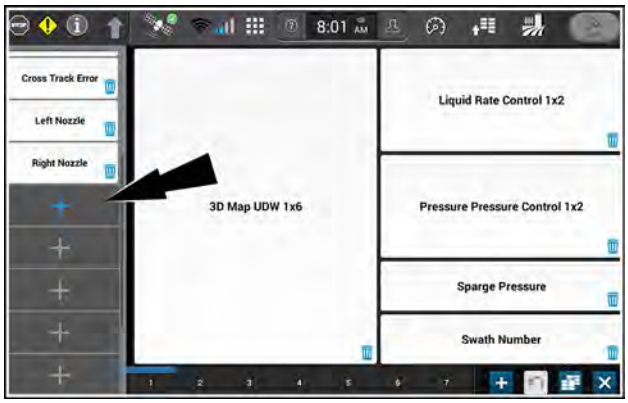
Press the “No” button **(2)** to cancel editing.



RAIL19PLM0167AA 1

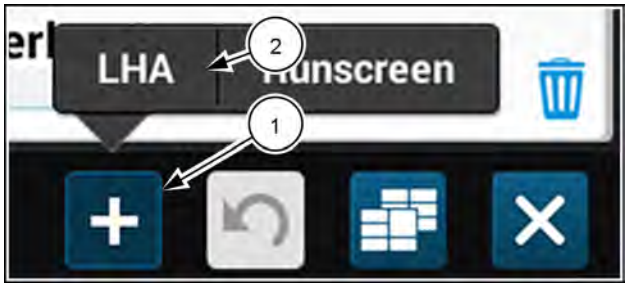
The layout screen for the selected run screen appears. This includes the layout screen for the lower LHA.

Press the available section in the lower LHA to establish the location of the desired User-Defined Window (UDW). The LHA menu appears.



RAPH23PLM0309AA 2

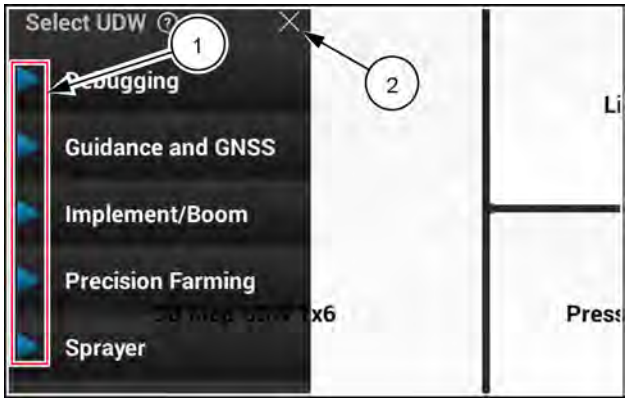
Alternatively, you can press the “Add” button **(1)**, and then press the “LHA” option **(2)** to open the lower LHA edit menu.



RAIL18PLM0173AA 3

Press the application **(1)** in the menu that has the desired window. The list of windows in the selected application appears.

Press the "X" button **(2)** in the menu if you wish to close the menu without selecting a menu item.

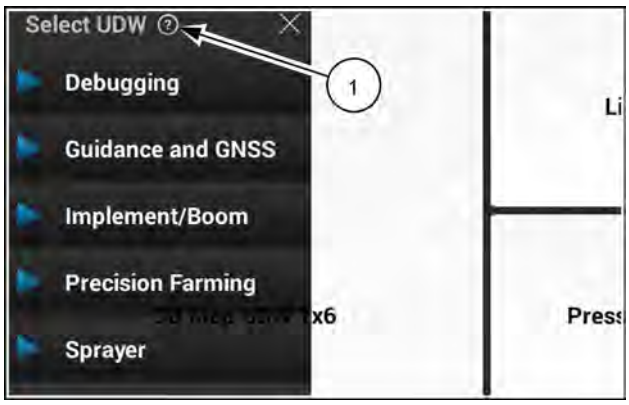


RAPH23PLM0310AA 4

Press to select the desired window option. If necessary, scroll to find the window option.

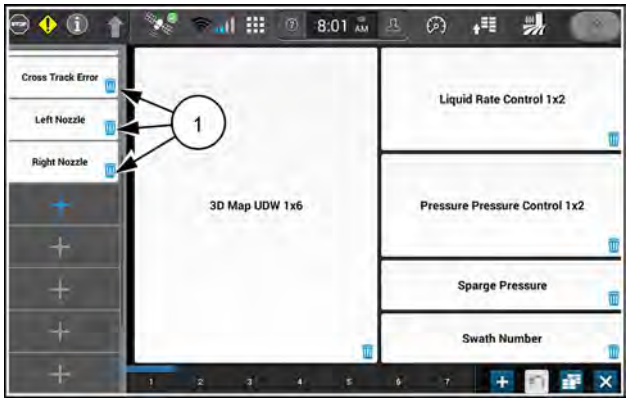
You can press the “?” icon **(1)** if you wish to see information about the “Select UDW” menu.

Swipe up or down with one finger to pan the UDW list.



RAPH23PLM0310AA 5

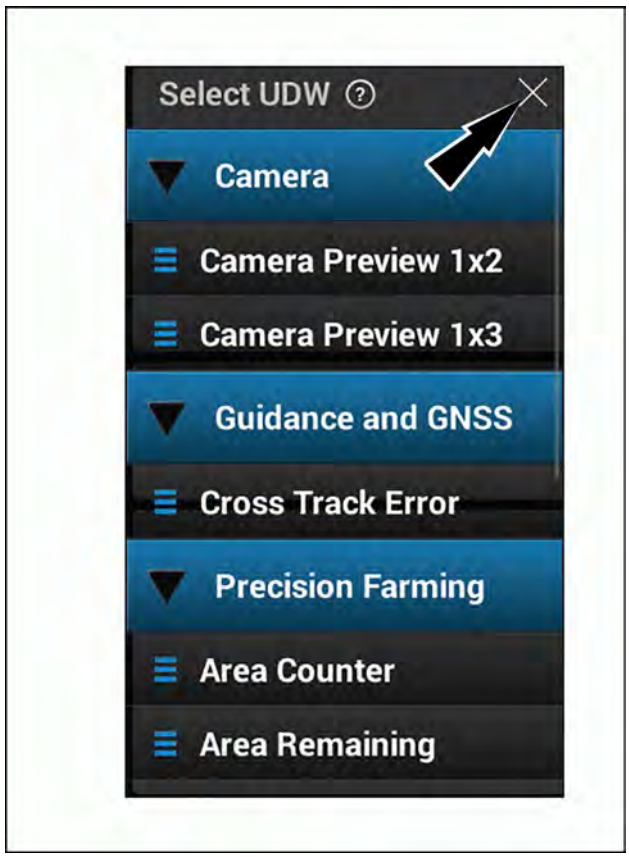
The window appears in the lower LHA layout screen. If you wish to remove a window, press the “Delete” icon **(1)**.



RAPH23PLM0309AA 6

If needed, select another window to add to the lower LHA.

Press the "X" button in the menu if you wish to close the menu.



RAIL19PLM0628BA 7

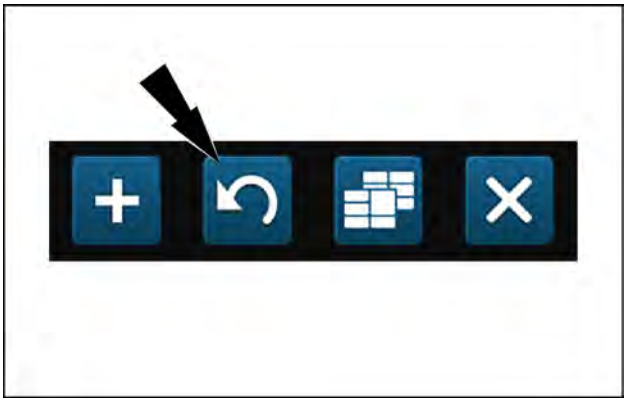
You can drag and drop menu items to the LHA, and insert them anywhere in the LHA. Long-press the desired window, and then drag and drop the window into the desired location in the LHA.

If you wish to change the sequence in which the windows appear in the LHA, drag and drop them to the desired locations.

RAPH23PLM0312AA 8

You can revert to a previous state if you wish to cancel changes you have made.

Press the “Revert” button. The “Revert” menu appears.

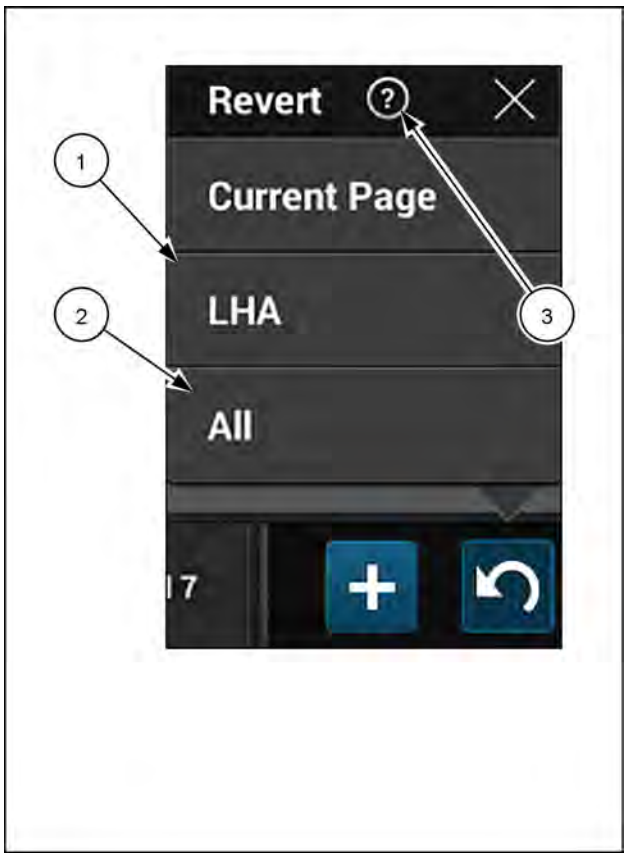


RAIL19PLM0168AA 9

Press the “LHA” option **(1)** to revert only the changes you made to the LHA.

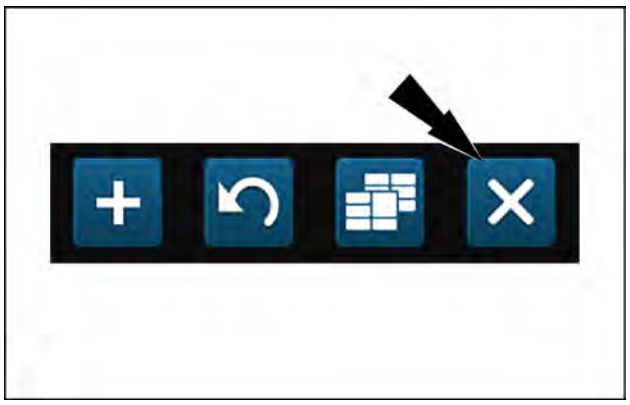
NOTE: *You can press the “All” option* ***(2)*** *to revert all changes you made in the LHA editor.*

Press the “?” icon **(3)** to see additional information about the “Revert” menu.



RAIL19PLM0631BA 10

Press the “Close” button to save the changes.



RAIL19PLM0168AA 11

Run screens

A display that has never had any of its run screen layouts or Left-Hand Area (LHA) layout edited has a default set of User-Defined Windows (UDW’s) already programmed.

The defaults are determined by what vehicle is selected.

Any changes to the run screen layouts are saved only for the current vehicle.

Customizing the run screens

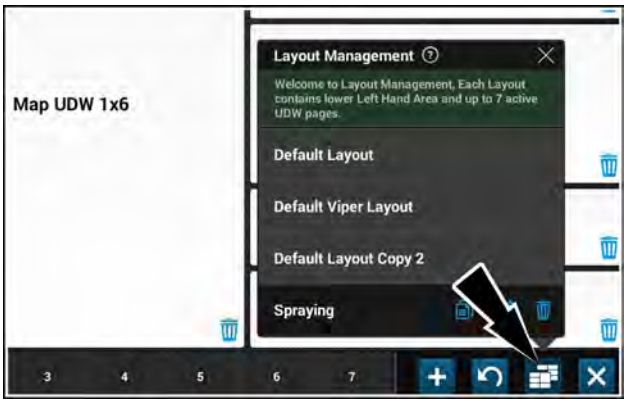
Layout management

A logged-in user can establish multiple run screens and Left-Hand Area (LHA) layouts for each combination of vehicle and implement.

NOTE: *Using the "Layout Management" menu is not a requirement for editing the run screen and LHA layouts.*

Press the "Layout Management" button to open the "Layout Management" menu.

A default layout menu appears. The defaults are commonly used layouts. Any other previously added menu items also appear.



RAPH23PLM0313AA 1

You can use a default layout in the software as a starting point to create your own layout to suit your operation. The defaults are shown here without any customized layouts listed.

If you wish to add a layout to the menu, select one of the default menu items. Press the "Copy" icon in the selected menu item.

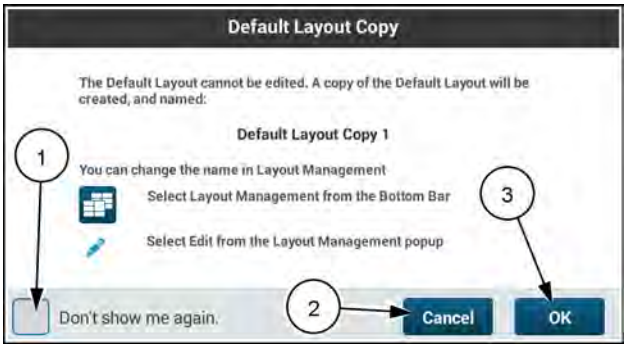
RAPH23PLM0313AA 2

An advisory popup window appears. The advisory states that default layouts cannot be edited. It gives the default name for the new layout. It provides instructions for changing the name of the new layout.

Check the check box **(1)** if you do not want to see this advisory popup again.

Press the "Cancel" button **(2)** to cancel the creation of the new layout.

Press the "OK" button **(3)** to continue.



RAPH23PLM0314AA 3

To edit the layout name, press the “Edit” icon **(1)** to open the keyboard. An editing scratchpad appears. Use the keyboard to enter the desired layout name.

NOTE: *You cannot edit the name of a default layout item.*

Press the “Done” button to finish editing and close the keyboard. The new menu item with the edited name appears.

To delete a custom item in the layout menu, select the layout and press the “Delete” icon **(2)**.

NOTE: *You cannot delete a default layout item.*

Press the button **(1)** to close the “Layout Management” menu.

RAPH23PLM0313AA 4

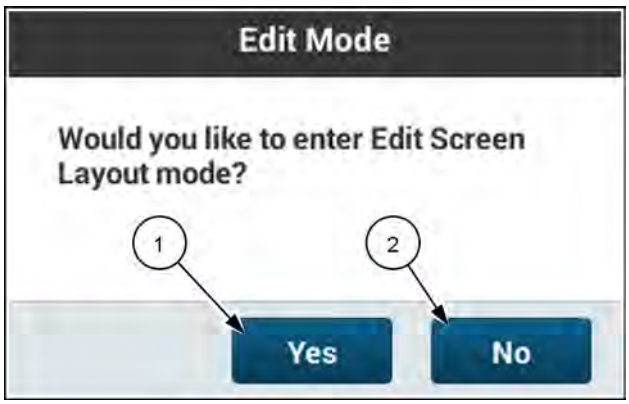
RAPH23PLM0313AA 5

Editing User-Defined Window (UDW) layouts

Long-press a run screen button **(1)**. A dialog appears asking if you wish to enter layout editing.

Press the “Yes” button **(1)** to edit the layout editor.

Press the “No” button **(2)** to cancel editing.



RAIL19PLM0167AA 6

Press to select the run screen **(1)** that you wish to edit.

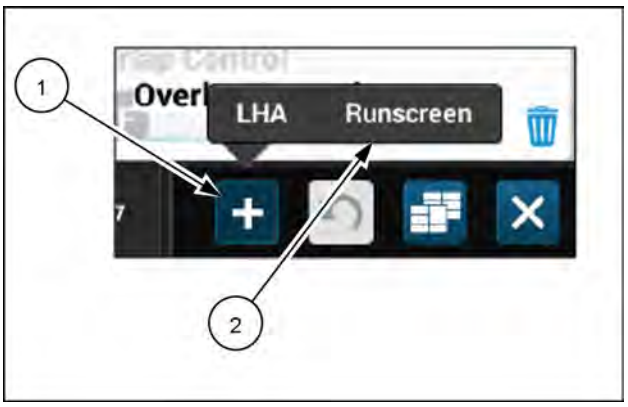
Press the desired box **(2)** to establish the location of the top section of the desired UDW.

RAPH23PLM0317AA 7

NOTE: *There must be space available for the UDW. If needed spaces are already occupied by a UDW, press the "Delete" icon to remove it. You can also drag-and-drop the existing UDW to another location if there is enough space for it.*

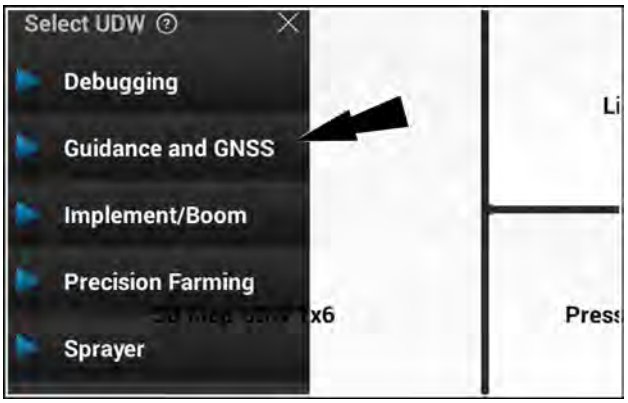
If all available spaces are occupied, press the "add" button **(1)** to open the "LHA/Runscreen" selection popup.

Press the "Runscreen" selection **(2)** to open the run screen menu.



RAIL18PLM0164AA 8

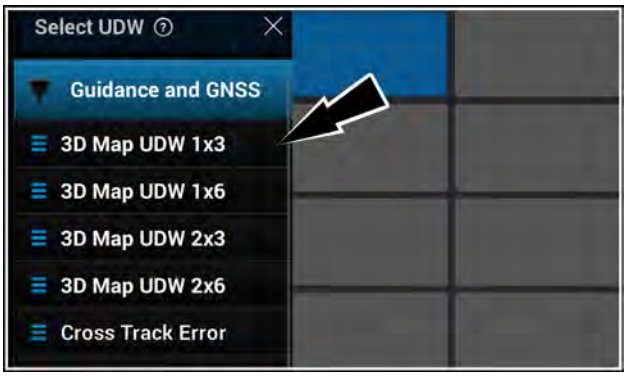
Select the desired UDW category.



RAPH23PLM0310AA 9

Press to select the desired UDW **(1)** and enter it into the selected space in the run screen.

Repeat this procedure to place additional windows into the selected run screen layout.

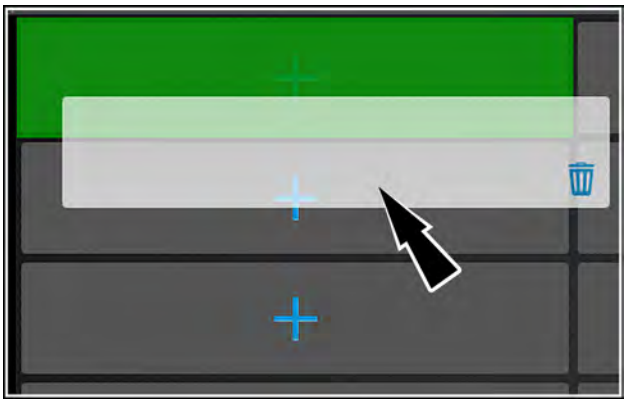


NHPH23PLM0534AA 10

You can drag and drop a UDW in the menu to the desired location on the run screen.

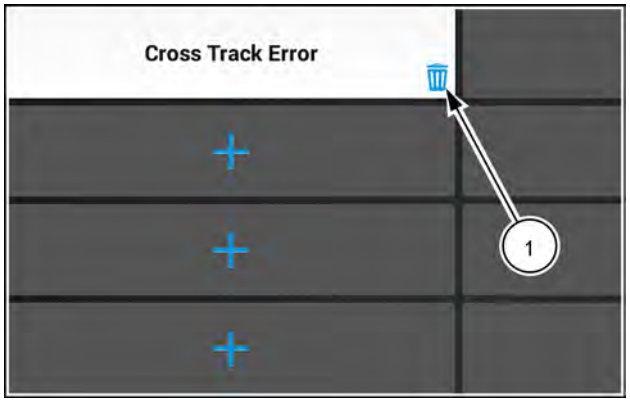
Long-press the desired UDW, and then drag and drop the UDW into the desired location in the run screen.

If you wish to change the sequence in which a UDW appears in the run screen, drag and drop it to the desired location.



RAIL19PLM0170AA 11

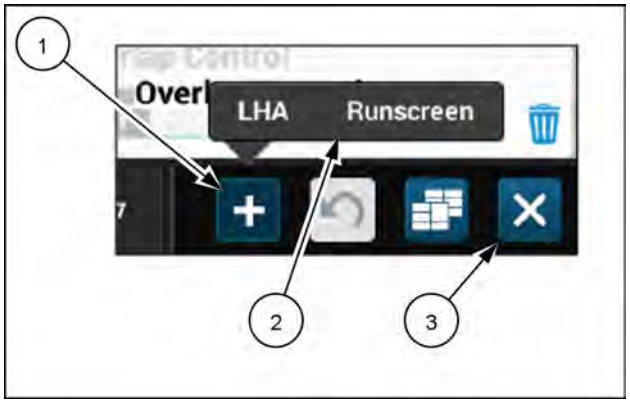
To remove the selected UDW or an existing UDW from the run screen, press the "delete" icon **(1)** in the UDW in the layout screen.



NHIL20PLM0179AA 12

Press the "add" button **(1)**, and then select “Runscreen” **(2)** to make additional edits in the layout screen.

Press the “close” button **(3)** to save the change or continue making other edits to the run screen layout as needed.

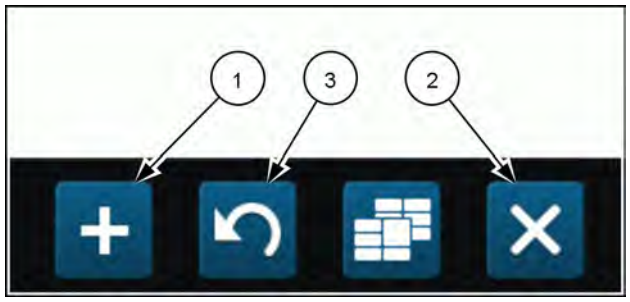


RAIL18PLM0164AA 13

Press the "add" button **(1)** to make additional edits in the layout screen.

Press the "close" button **(2)** to accept your changes and close the layout screen.

Press the “revert” button **(3)** to revert the changes that you made to the run screen layout.

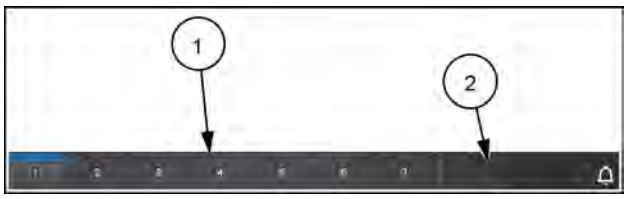


RAIL18PLM0168AA 14

Bottom bar

The bottom bar of the display is always visible. The bottom bar consists of the following sections:

- Run screen buttons **(1)**
- Notification bar **(2)**



RAPH21PLM1292AA 1

Run screen buttons

There are seven run screen buttons.

Press a run screen button to open its run screen.

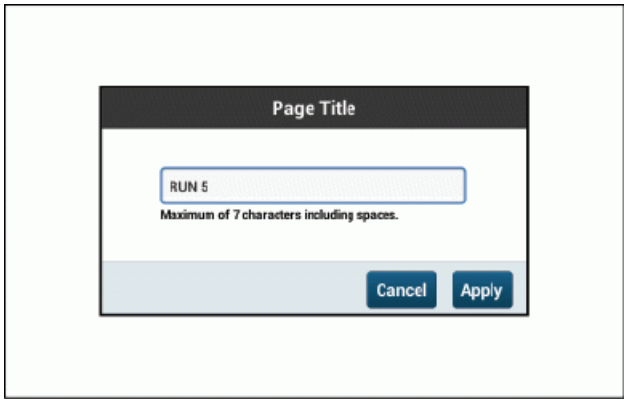
You can rename and reorganize the run screen buttons to suit your operation.

Renaming run screens

You can rename the run screens to make them describe the content in its layout or to otherwise suit your operations.

To rename a run screen, long-press the run screen button. The layout screen for the selected run screen opens.

Press the run screen button again once. The “Page Title” window appears.



RAIL18PLM0158AA 2

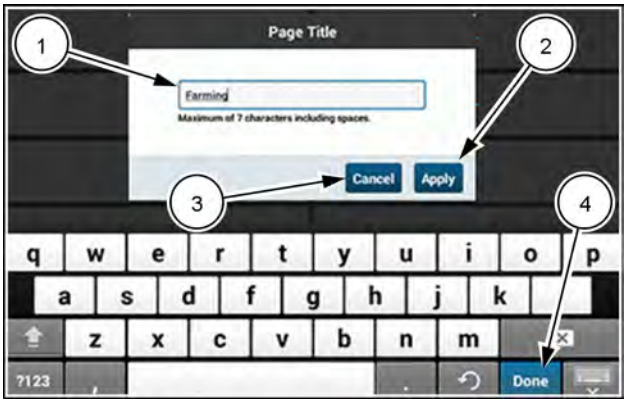
Press the editing field **(1)**. The keyboard appears.

Use the keyboard to enter the desired name.

Press the “Apply” button **(2)** to apply your change and close the editing window.

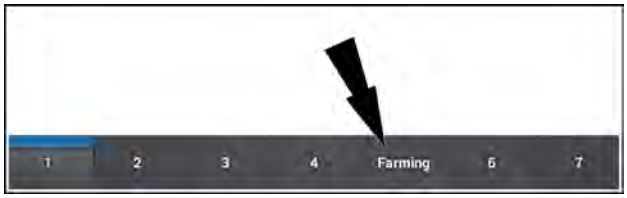
Press the “Cancel” button **(3)** to discard your change and close the editing window.

Press the “Done” button **(4)** on the keyboard to close the keyboard and return to the “Page Title” window without changing the name.



RAIL18PLM0159AA 3

The editing window and keyboard disappear from the layout screen. The new name appears on the run screen button.



RAPH21PLM1293AA 4

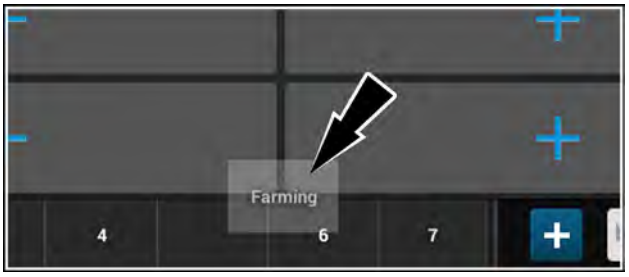
Organizing run screens

You can move the run screen buttons in the bottom row to organize them.

To move a run screen in the bottom row, long-press any run screen button. The layout screen for the selected run screen opens.

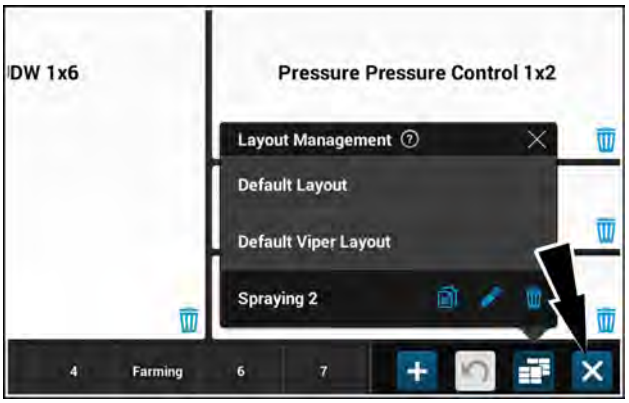
Drag-and-drop the desired run screen over the existing run screen button in the desired location.

The affected run screens swap places. The button names do not change places.



RAPH21PLM1294AA 5

Press the “Close” button to save the change or continue making other edits to the run screen layout as needed.



RAPH23PLM0395AA 6

Notification bar

The notification bar is always visible in the bottom right-hand corner of the display.

The far-right icon is the notification icon. The notification icon informs you if there are new status changes or alerts available. The notification icon is always visible.

If the notification icon has a number on it, there are that many new notifications of events that occurred since you first turned on the display.

RAIL18PLM0177AA 7

During system startup, an hourglass icon appears. This hourglass icon remains in place until the startup sequence is complete.

RAPH21PLM1001AA 8

The status icons appear in the sequence that they became active, with the leftmost icon being the oldest.

If there are more than five regular statuses, the five most recent status icons appear.

RAPH23PLM0384AA 9

High-priority status icons appear to the left of any regular status icons. They have a red triangle with a white exclamation point over them.

RAIL18PLM0179AA 10

Up to four high-priority status icons fit in the notification bar. If there are more than four high-priority status notifications, the icons scroll.

No regular status icons appear when there are four or more high-priority notifications.

RAIL18PLM0180AA 11

Press the notification icon to open the “Statuses” list.

When there are no high-priority statuses, the regular statuses appear listed in the sequence they became active with newest status on top.

You can scroll the “Statuses” list if the active statuses do not all fit.

RAPH23PLM1229BA 12

High-priority statuses appear at the top of the “Statuses” list. They appear in the sequence that the high-priority statuses became active, with the oldest on top.

While the “Statuses” list is open, the remainder of the display appears dim. You cannot interact with any item on the display while the “Statuses” list is open, except to close the “Statuses” list.

Press anywhere on the display to close the “Statuses” list.

RAIL18PLM1064BA 13

Status and notification icons

Precision farming and guidance icons

Icon	Description	Priority	How status clears
	Startup		Clears when the system completes its startup process
	USB memory device detected	Normal	Clears when the Universal Serial Bus (USB) stick is no longer detected
	USB memory device error	Normal	Clears when error is no longer detected
	Import in progress	Normal	Clears when the import is completed
	Import failed	Normal	Clears at key off
	Import complete	Normal	Clears at key off
	Export in progress	Normal	Clears when export complete
	Export failed	Normal	Clears at key off
	Export complete	Normal	Clears at key off
	Boundary recording In progress	Normal	Clears when boundary recording ended
	Boundary warning, reached end of field	Normal	Clears when the vehicle is outside of the boundary warning time threshold set in the “Global Settings” screen.
	Landmark recording in progress	Normal	Clears when landmark recording ended
	Landmark warning, landmark reached	Normal	Clears when the vehicle is outside of the landmark warning time threshold set in the “Global Settings” screen.
	Swath recording in is progress	Normal	Clears when swath recording ended
	Swath skipping is in progress	Normal	Clears when swath skipping is no longer in progress
	The virtual tank level is low, within the warning threshold.	Normal	Clears when the virtual tank level is above the warning threshold.

Icon	Description	Priority	How status clears
	Overlap / boundary control activated	Normal	Clears when 1. The boundary and overlap switch is OFF. 2. The boundary or overlap control is ON, but boundary or overlap control is not active. 3. There are no sections that are commanded OFF by boundary or overlap control.
	Vehicle in road mode	High	Clears when road mode turned off
	Cloud file available	Normal	Clears when the cloud file is downloaded
	Downloading	Normal	Clears when the download is complete
	Download error	Normal	Clears at key OFF
	Download paused	Normal	Clears when the download is unpaused
	Download postponed	Normal	Clears at key OFF or when the download is started
	Download completed	Normal	Clears at key OFF
	ISOBUS activated	Normal	Clears when the ISOBUS button is no longer pressed and engaged.
	ISOBUS detected	Normal	Clears when the ISOBUS button is pressed and engaged.
	ISOBUS timeout	Normal	Clears when ISOBUS communication is restored.
	Messenger application has unopened messages	Normal	Clears when you open all messages

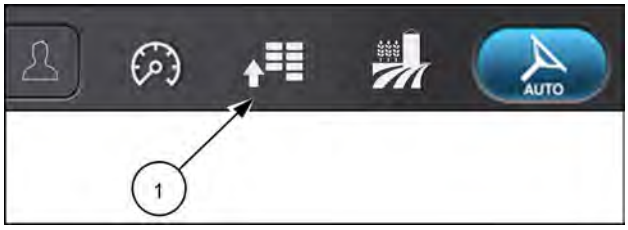
NOTE: *Additional icons for GNSS initialization and status can be found on “Status indicators” (**3-26**).*

Sprayer card configurable controls

Use the configure buttons on the armrest as controls for the following systems:

- Autoguidance
- Precision farming
- Variable rate product application

To access the “Configurable Controls” screen, press the button **(1)** on the top bar to navigate to the “Menu” screen. Press the “Settings” tab, if necessary.



RAIL19PLM0121AA 1

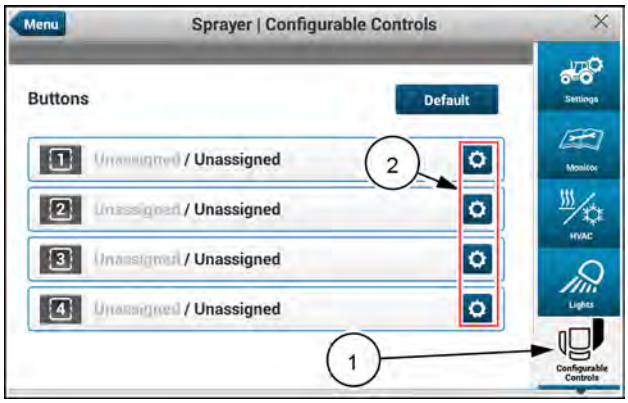
Press the “ Sprayer Rear” card.

NOTE: *The “ Sprayer Rear” name means this is a sprayer with rear-mounted booms.*

RAPH21PLM1073AA 2

Press the “Configurable Controls” tab **(1)**. The “Configurable Controls” screen opens.

Select the desired button by pressing the gear button **(2)**.



RAPH21PLM1072AA 3

NOTE: *See your vehicle operators manual for information about the configurable controls for machine control.*

Configurable controls for guidance:

- Guidance setup – open the “GNSS and Guidance” setup card
- Nudge left
- Nudge right
- Nudge reset

Configurable controls for precision farming:

- Rate up
- Rate down
- Rate 1
- Rate 2

Configurable controls for variable rate product application:

- Select prescription rate
- Adjust target rate up
- Adjust target rate down
- Select target rate 1
- Select target rate 2

GNSS status

Status indicators

Global Navigation Satellite System (GNSS) top bar icon

The Global Navigation Satellite System (GNSS) top bar icon is shown on the top bar of the display. The GNSS top bar icon is depicted by a satellite icon, along with an icon to indicate position accuracy status.

When the display is powered ON and the system components are initialized, the system starts tracking satellites immediately. The correction source that is in use determines how long it takes to acquire the required satellites. This may take a few minutes or much longer.

GNSS top bar icon status

Indicator	Signal status	Description
	No reliable GNSS position available	No GNSS position is available, or the position is of very poor quality. No mapping, position recording, or guidance features are available.
	GNSS position is available, but the estimated error is higher than the warning threshold.	The estimated error is higher than the warning threshold that was set by the operator. The best available correction source will be used to determine GNSS position. If the accuracy, which is the degree to which the result of a measurement conforms to the correct value, was higher than the set threshold, the signal status would be good.
	Good position	The estimated error of the correction sources is less than the accuracy threshold that was set by the operator. The GNSS system is ready for autoguidance operation with the primary or backup correction source selected. All accuracy levels set by the operator are within range for continued operation.

NOTE: *The GNSS top bar icon indicates the status of the signal provided by the AFS VectorPro GNSS receiver, not the internal receiver utilized for telematics in the Processing and Connectivity Module (PCM).*

A system with be affected by any of the following items:

- System initializing – The system is in the process of initializing or converging, and the status may change as time passes. This varies with correction type.
- Receiver satellite signals blocked – If the vehicle is in a building or the view of the sky is obstructed by trees or buildings, no position may be available, the position may be poor quality, and the initialization or convergence may be slowed.
- RTK correction not available – loss of RTK radio or cellular service.
- Accuracy setting – may affect how long the system takes to change to green. Requesting a higher accuracy causes a longer initialization time. The accuracy setting also affects how often autoguidance may disengage, or how often the accuracy warning is active.

The estimated accuracy affects the GNSS status. The estimated accuracy is the threshold value used to indicate if autoguidance is available for engagement. When outside the threshold, autoguidance will not use this correction source for engagement. To adjust the threshold value up or down, go to the GNSS setup screen and adjust the value. See ‘"Status" screen’ (**3-26**).

GNSS bottom bar status indicators

The following status indicators display in the bottom bar of the display to indicate the GNSS status. When a status indicator is active, press the bottom bar to open the right-hand pane and view the status message.

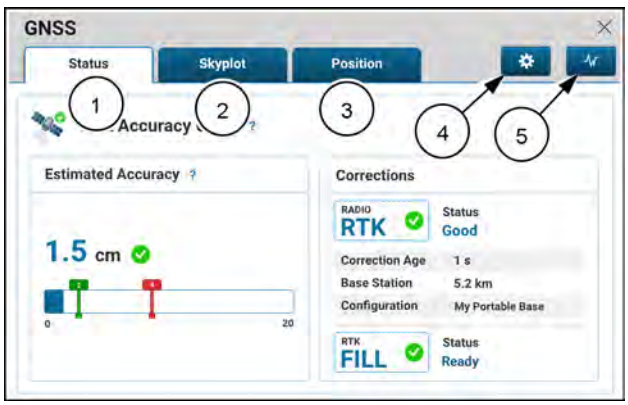
GNSS bottom bar status messages

Icon	Status
	Remain Stationary to Initialize GNSS
	Move to Open Sky
	Drive to Determine Heading
	RTK Fill In Use
	RTK Fill Exhausted

For more information on the GNSS status indicators, see “’Status’ screen” (**3-26**).

GNSS status page

To access the GNSS status page, press the GNSS top bar icon. The GNSS status page opens.



NHIL20PLM0320AA 1

The GNSS status page contains the following tabs:

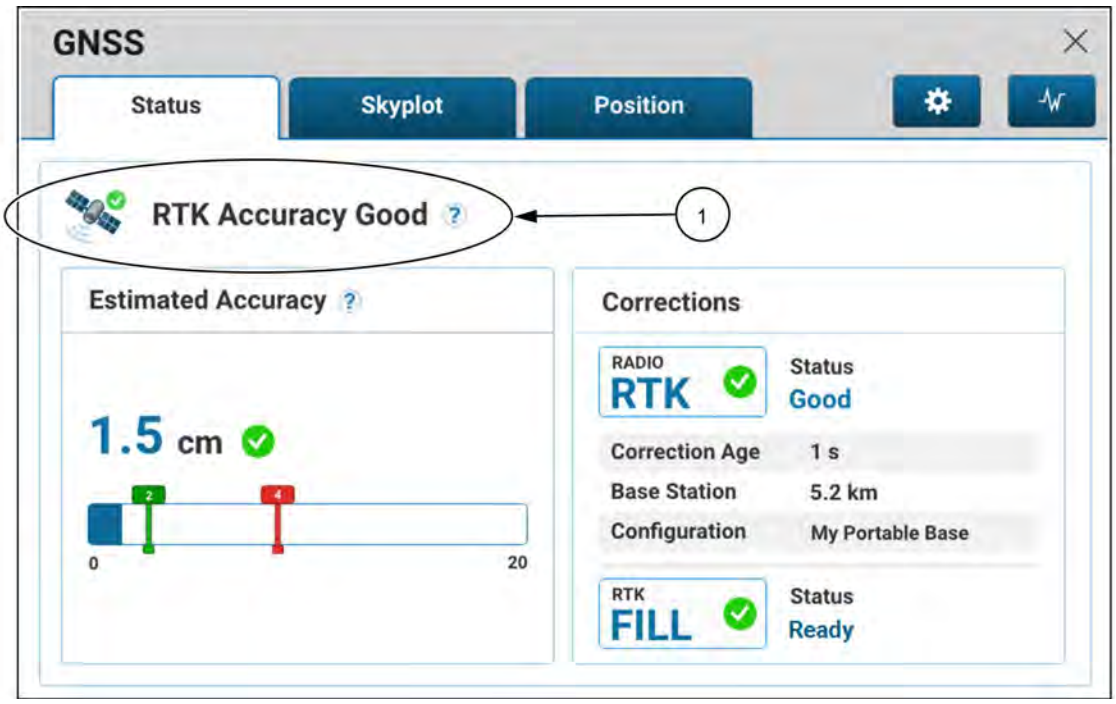
- **(1)** “Status” (default) – Shows the system status, along with additional information for the primary correction source and backup correction source. The information shown on the “Status” page will vary based on selected correction sources. See ‘"Status" screen’ (**3-26**).
- **(2)** “Skyplot” – Shows the satellite position, type, and status for the constellation in use. The “Skyplot” also shows the location of the SBAS correction satellites. See ‘"Skyplot" screen’ (**3-32**).
- **(3)** “Position” – Shows vehicle-related position information. See ‘”Position” screen’ (**3-34**).

Press the button **(4)** to access the “GNSS Setup” screen.

Press the button **(5)** to access the “GNSS Diagnostics” screen.

"Status" screen

The GNSS status area **(1)** indicates the overall status of the GNSS system on the vehicle.



NHIL20PLM0328GA 1

GNSS status messages

Icon	Status	Description
	Remain Stationary to Initialize GNSS	The stored position is being recalled and/or the Inertial Measurement Unit (IMU) is initializing. Keeping the vehicle still while during this state will result in the GNSS system becoming available sooner.
	Move to Open Sky	The GNSS reception is poor; there is no position or heading. Move the vehicle to an area with a clear view of the sky, away from buildings or trees, so that the GNSS system can initialize and calculate positions.
	Drive to Determine Heading	Speed up or slow down to allow the system to determine the heading. Turn, if possible. Driving is required for GNSS to initialize and determine position and heading. Make sure that the GNSS receiver is secured in the proper location and orientation.
	No position	The GNSS receiver is unable to determine position, or the position accuracy is very low. Move the vehicle to an area with a clear view of the sky, away from buildings and trees. Check the GNSS diagnostics screen for more information.
	Accuracy low	The accuracy of both the primary and backup correction type are worse than the criteria defined in the “Accuracy Setup” menu. Move the vehicle to an area with a clear view of the sky, away from buildings and trees.
	Accuracy low, using backup	The accuracy of the backup correction type is better than the primary correction type. If the backup correction type is initialized, the system will automatically switch to the more accurate backup correction type.
	Converging	The primary correction type is converging. The accuracy threshold setting as selected in the “Accuracy Setup” screen has not yet been achieved. Position may change as accuracy improves. ***NOTE:*** *If you move the threshold slider closer to “Availability”, the position may change after you engage, as the system will continue to converge and achieve better accuracy.*
	Accuracy good	The accuracy of the primary correction type is good, and the estimated accuracy is better than the criteria defined on the “GNSS Setup” screen.

GNSS status examples

GNSS receiver error – No position is available. Check and resolve any active GNSS faults on the “Faults and Warnings” screen.

NHIL20PLM0799AA 2

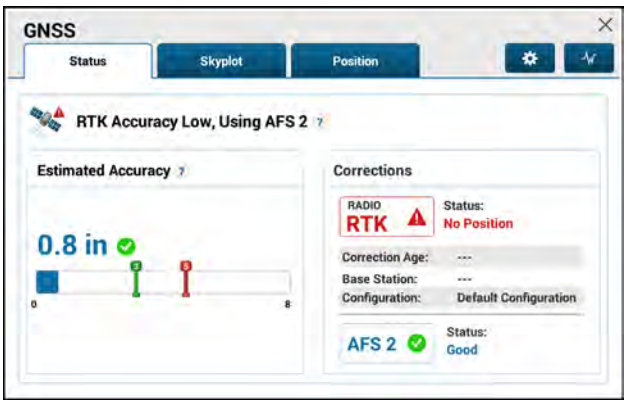
GNSS accuracy:

Primary correction: low

Backup correction: high

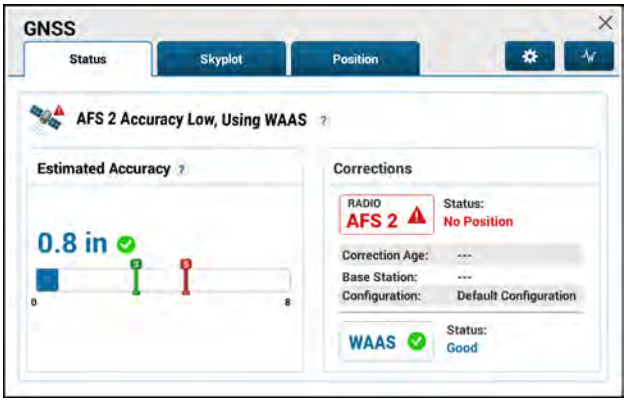
The primary correction accuracy is low. The system automatically switched to the more accurate backup correction. In this case, the backup WAAS correction is in use.

Primary RTK correction



RAPH23PLM0439AA 3

Primary AFS correction



RAPH23PLM0443AA 4

GNSS accuracy:

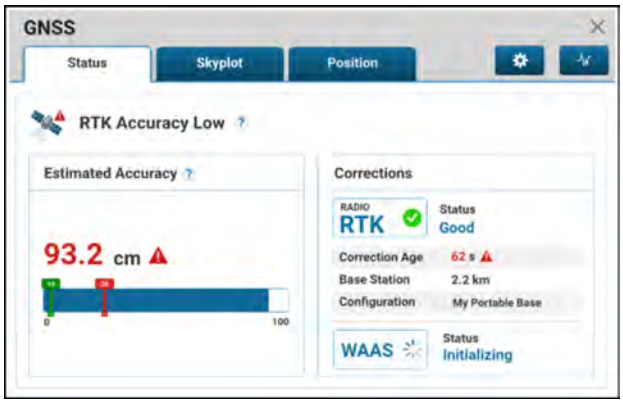
Primary correction: low

Backup correction: low

The primary correction accuracy is low. The accuracy of the backup correction is low, or the backup correction is not initialized. Move the vehicle to an area with a clear view of the sky, away from buildings and trees.

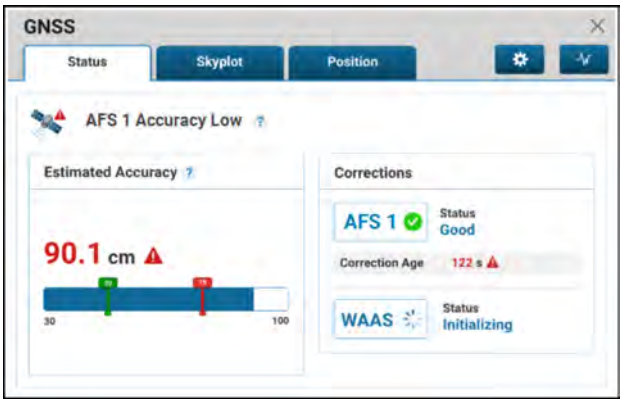
NOTE: *It is possible for accuracy to be low but the status is still good.*

Primary RTK correction



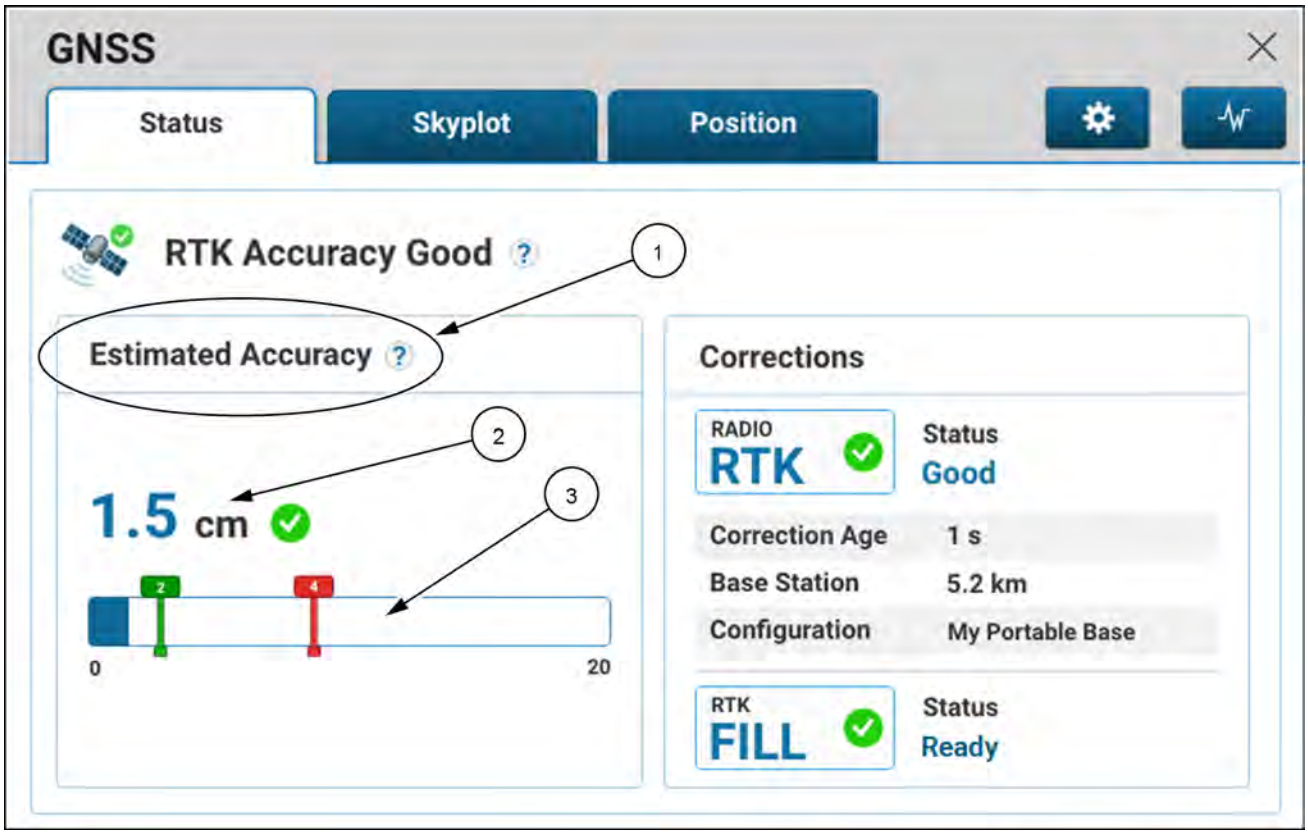
NHIL20PLM0322AA 5

Primary AFS correction



NHIL20PLM0327AA 6

Estimated accuracy



NHIL20PLM0320AA 7

The “Estimated Accuracy” area **(1)** displays the system estimated accuracy **(2)** and an estimated accuracy bar graph **(3)** to illustrate how the estimated accuracy may be improving toward or degrading away from the threshold that you defined in the “Accuracy Setup” menu of the “GNSS” screen. The estimated accuracy bar graph automatically updates as the estimated accuracy changes.

The progress bar contains two indicators:

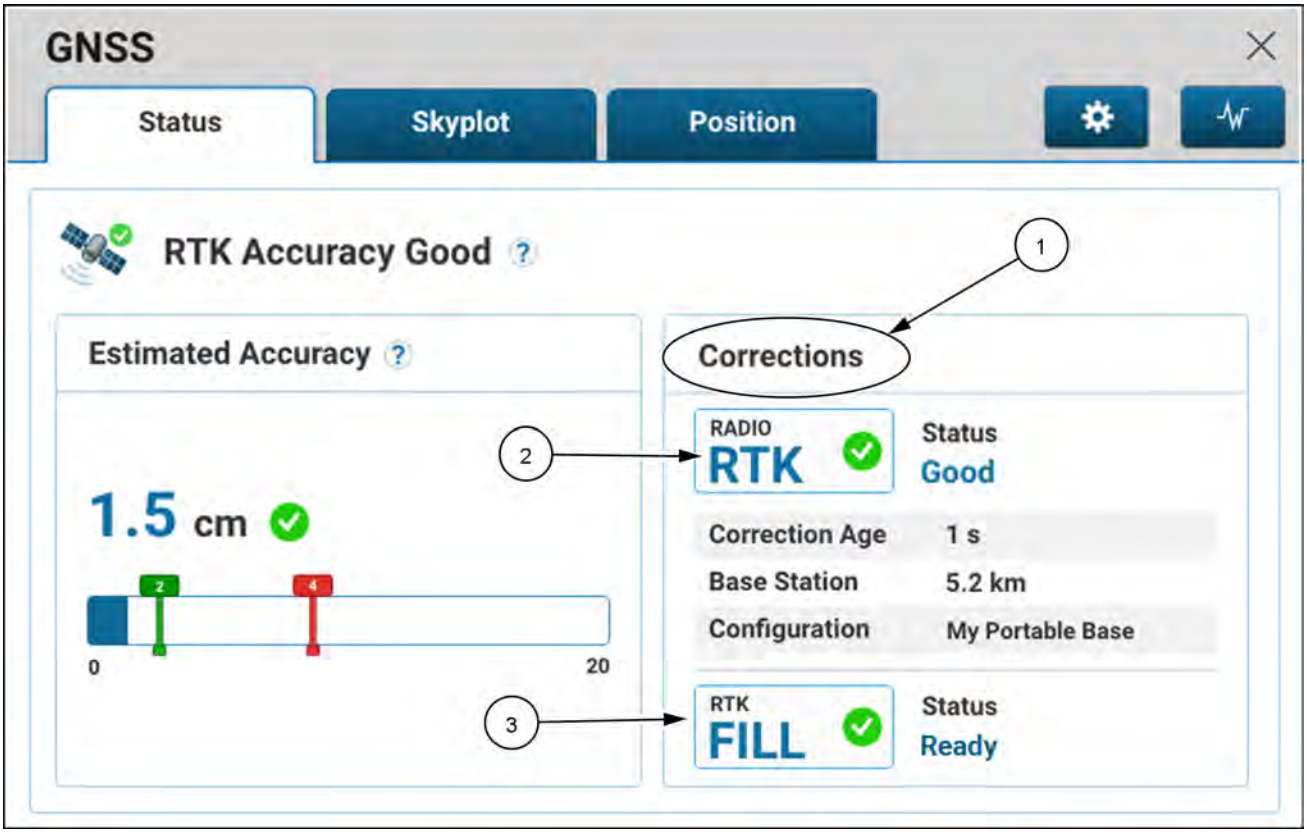
- The green indicator represents the warning threshold. If the estimated accuracy reaches this threshold, the system will alert you.
- The red indicator represents the disengage threshold. If the estimated accuracy reaches this threshold, the system will disengage autoguidance. If the system is not yet engaged, then you cannot engage guidance until the estimated accuracy is below the red threshold.

NOTE: *The scale of the progress bar differs, depending on your primary correction type.*

Estimated accuracy status

Indicator	Status	Description
	Poor accuracy	The estimated accuracy value is above both the disengage threshold and the warning threshold. Guidance cannot be used.
	Degraded accuracy	The estimated accuracy value is below the disengage threshold, but above the warning threshold. You may still use guidance but will receive warnings that indicate your accuracy is lower than desired.
	Good accuracy	The estimated accuracy value is below both thresholds. No warnings will trigger, and guidance features may be used normally.

Corrections



NHIL20PLM0320AA 8

The "Corrections" area **(1)** area displays the primary correction type **(2)** and the backup correction type **(3)**, as well as the correction type status.

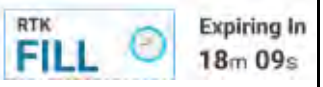
The correction age reports the time that has passed since the last message was communicated to the receiver, in seconds. The typical values will vary with the correction type; RTK age is typically less than three seconds, and the accuracy can suffer if the correction age is more than eight seconds. For AFS corrections, the correction age should be less than 30 seconds.

For RTK corrections, use the base station value to view the distance to the selected base station. Using a base station that is too far away will degrade accuracy.

Use the configuration name to confirm that you have the correct base station selected.

NOTE: *The information shown will vary based on selected correction sources.*

RTK Fill status

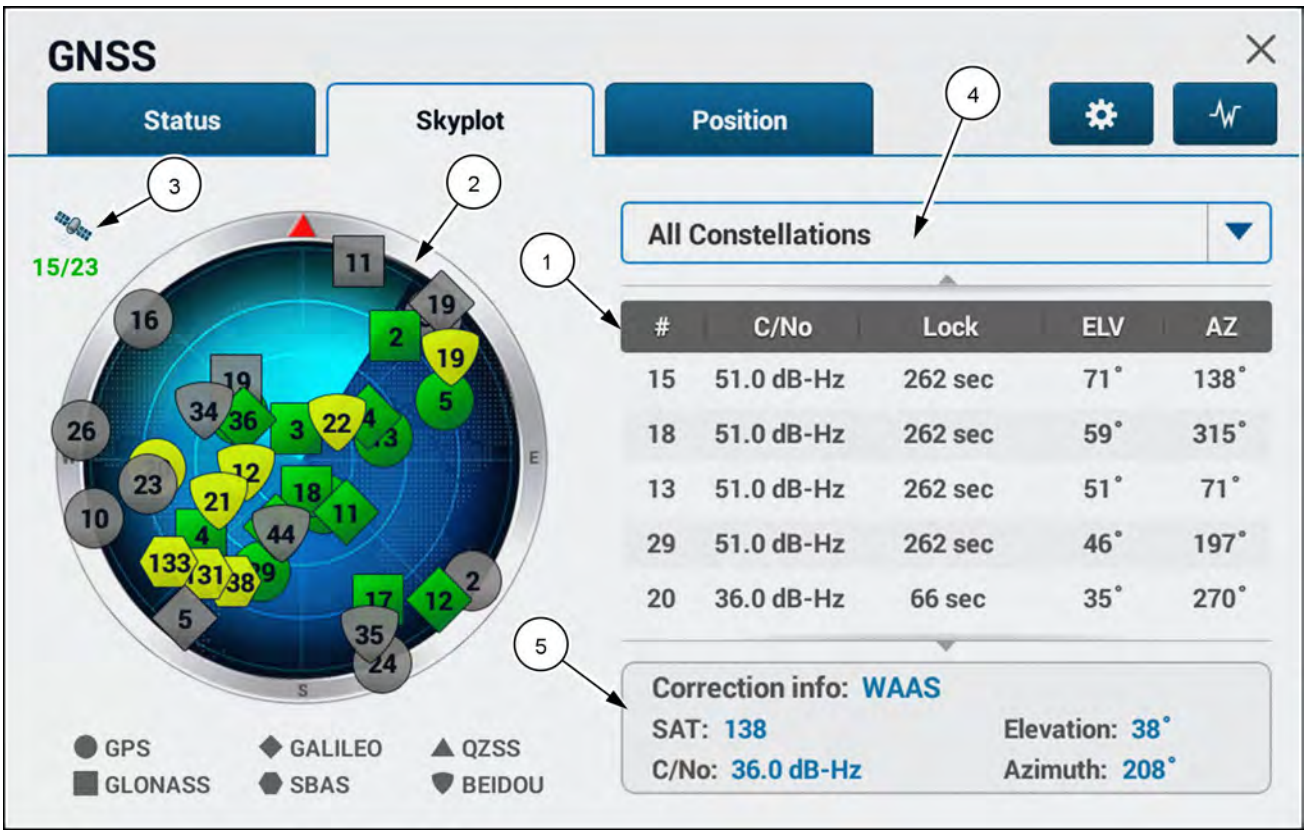
	If you have a AFS 1 or AFS 2 subscription, the RTK Fill timer is shown. ***NOTE:*** *With an RTK Fill Pro subscription available in some markets, there is no expiration timer.*
	If you have a AFS 3 subscription, RTK Fill can be used indefinitely. The green status “In Use” is shown.
	If RTK Fill is not fully initialized, then the “In Use” status will be yellow. Full accuracy may not be maintained when RTK Fill is in use.

NHIL20PLM0329AA 9

RTK Fill status messages

Icon	Status	Description
	RTK Fill In Use	RTK Corrections are not available. The RTK Fill mode is active, using satellite corrections for up to 20 minutes. Consider driving to an area with RTK corrections before the time is exhausted, or accuracy will be degraded. ***NOTE:*** *With an RTK Fill Pro subscription available in some markets, the satellite corrections can continue indefinitely.*
	RTK Fill Exhausted	The RTK Fill time limit has been exceeded. RTK accuracy will be restored and RTK Fill will reset if good correction reception is re-established. ***NOTE:*** *This is not applicable with an RTK Fill Pro subscription, available in some markets.*

"Skyplot" screen



NHPH23PLM1760FA 1

The skyplot screen is divided into a table area **(1)** and a map area **(2)**. Both areas provide valuable information on the number of satellites **(3)** that are currently visible and tracked (in use) by the GNSS receiver. You can filter the satellites shown on the skyplot by selecting a specific constellation from the drop-down menu **(4)**. The default selection is “All Constellations”.

The correction information **(5)** for the satellite correction source in use is shown below the table. This area may show information for the SBAS correction (WAAS, EGNOS, etc) or AFS correction, depending on which correction source is enabled. The Elevation and Azimuth values are only available for SBAS correction sources. For other correction sources, information for up to three satellites appears.

NOTE: *The satellite number is defined by the satellite systems, and is not unique between systems.*

The skyplot screen tracks satellite signals from the following constellations, as indicated by the legend under the map:

- Global Positioning System (GPS)
- Globalnaya navigatsionnaya sputnikovaya sistema (GLONASS)
- GALILEO Navigation Satellite System
- Quasi-Zenith Satellite System (QZSS)
- BeiDou Navigation Satellite System

Each signal source on the skyplot displays a color that indicates the current state.

Skyplot source signal quality

Status color	Description
Gray	The satellite is visible above the horizon, but is not being tracked by the receiver. The signals may be blocked.
Yellow	The satellite is tracked, but not being used directly to calculate position, possibly because the signals are of lower quality or not needed. The signals may be used to enhance the position estimate.

Status color	Description
Green	The satellite is used to calculate the position.

NOTE: *A satellite can be visible, but not tracked, because its signal is too poor.*

The table area displays information about a maximum of 10 satellites. Each satellite is identified by its number. Scroll down to see all of the satellites that can be viewed.

For each satellite, the table provides its Carrier-to-Noise (C/No) ratio, elevation, and azimuth.

The map area visually represents the locations of the satellites in relation to the vehicle and true north. All visible and tracked satellites are shown and identified by number.

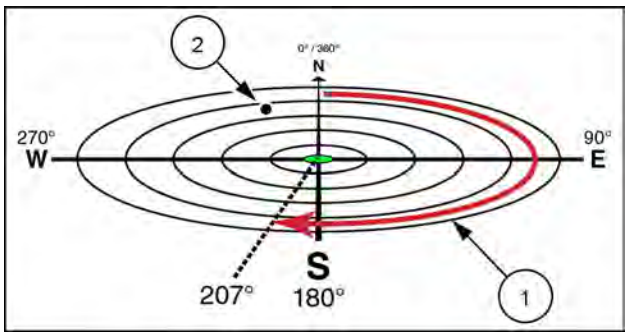
NOTE: *The vehicle location is always at the very center of the map. The vehicle heading is depicted by the red pointer on the outside ring of the skyplot.*

The azimuth and the elevation are angles that define the position of a satellite in the sky relative to the vehicle.

NOTE: *In the following two-dimensional representations of three-dimensional space, the north-south axis runs perpendicular to the reading surface. South is behind the reader and north is in front of the reader.*

The azimuth **(1)** is the compass bearing on the horizon, relative to true north, of a point directly beneath a satellite **(2)**. Compass bearings are measured clockwise in degrees from north. Azimuth angles range from **0°** (north) through **90°** (east), **180°** (south), **270°** (west), and back to **360°** (north again).

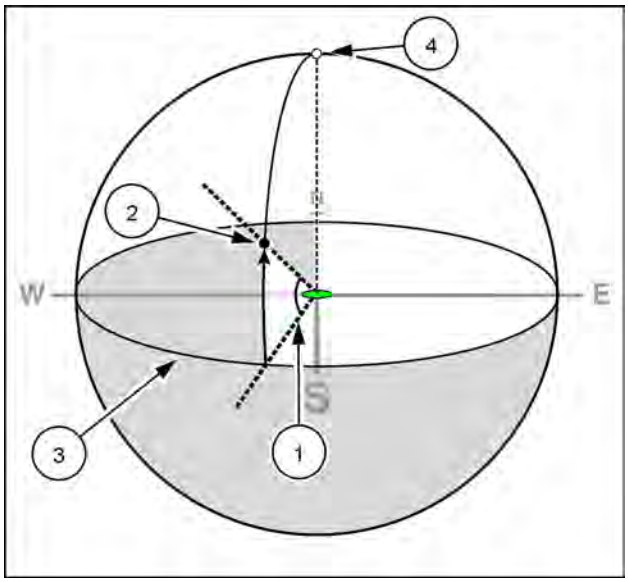
In the illustration shown, the vehicle is located at the center green circle. A satellite with an azimuth of **207°** is currently located **207°** from north in a clockwise direction relative to the vehicle. This is slightly more southerly than south-southwest, which would be **225°**.



RAIL17DSP0885AA 2

The elevation **(1)** is how high the satellite **(2)** is in the sky relative to the horizon **(3)**. Elevation angles for objects above the horizon range from **0°** (on the horizon) up to **90°** (at the zenith **(4)**, i.e. directly above the vehicle).

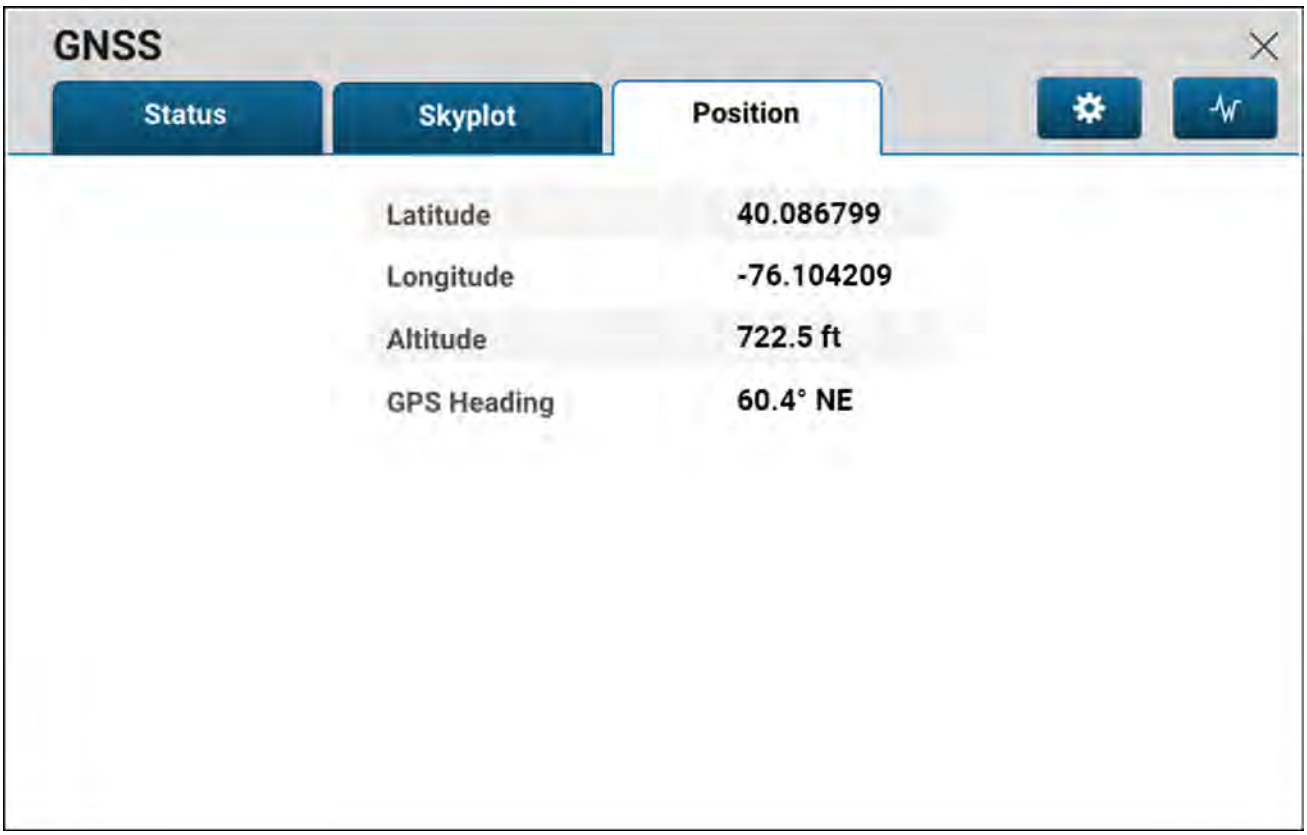
In the illustration shown, the elevation of the satellite is approximately **30°**, or one third of the way between the horizon **(3)** and the zenith **(4)**.



RAIL17DSP0886BA 3

A three-dimensional (3D) position fix requires a constellation of at least four satellites that are spread out across the sky. The more reliable satellites will always be the satellites that are the closest to the vehicle at the center point of the map. They are the satellites that are at higher elevations relative to the vehicle. The higher elevation means that the satellites will remain useful for a longer period of time because their signal is less likely to degrade from atmospheric conditions and ground clutter.

"Position" screen



NHIL20PLM0800FA 1

The position screen displays the following vehicle-related position information:

- Latitude of the vehicle (in decimal degrees)
- Longitude of the vehicle (in decimal degrees)
- Altitude of the vehicle (in feet or meters)
- The heading of the vehicle (in degrees)

Telematics status

Status indicators

NOTE: *Connectivity features may not be available in all markets.*

Telematics top bar icon

The connectivity top bar icon is present on the top bar of the display. The connectivity top bar icon is depicted by a Wi-Fi signal symbol and a cellular signal symbol.

The connectivity top bar icon will only show a status in the top bar if the telematics feature is activated and enabled.

The connectivity top bar icon dynamically updates to show the current signal strength of the Wi-Fi connection signal and the cellular connection signal, if equipped.

Connectivity top bar icon status

Indicator	Signal	Description
	Wi-Fi	The indicators will automatically update based on the strength of the connection signal. The indicators will change according to the following logic: 0% signal – No connection (grayed out) 25% signal – One bar 50% signal – Two bars 75% signal – Three bars 100% signal – Four bars
	Cellular	

Connectivity status page

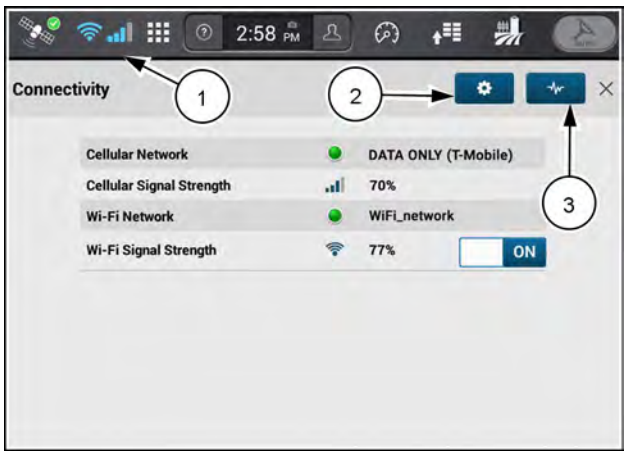
To access the connectivity status page, Press the connectivity top bar icon **(1)**. The connectivity status page contains the following information:

- Cellular Network
- Cellular Signal Strength
- Wi-Fi Network
- Wi-Fi Signal Strength

The information on this page is read-only.

To access the “Connectivity Settings” page, press the “Settings” button **(2)**.

To access the “Connectivity Diagnostics” page, press the “Diagnostics” button **(3)**.



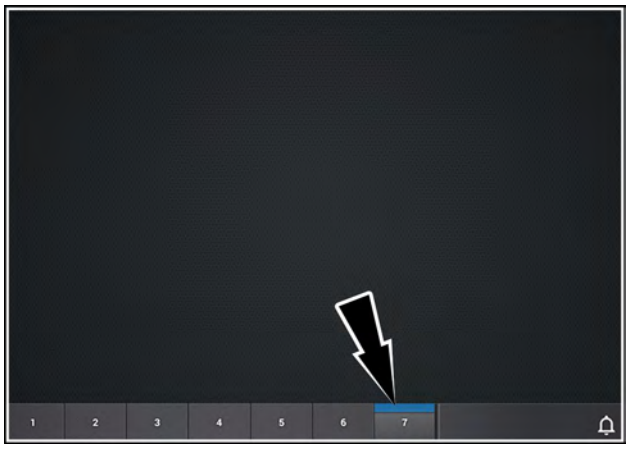
NHPH23PLM1201AA 1

User-Defined Windows (UDW)

Introduction

Seven run screens are shared by all applications on the display. For example, you can combine vehicle performance with autoguidance and precision farming content on one run screen. Each run screen is accessible by pressing the applicable run screen tab on the bottom row.

You can customize all of the run screens to suit your operations.



RAPH21PLM1545BA 1

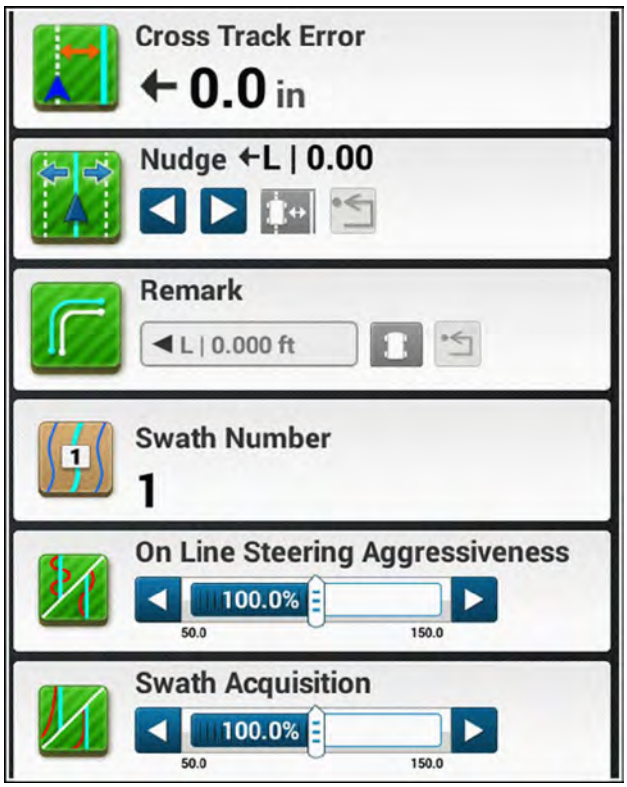
A display that has never had any of its run screen layouts or Left-Hand Area (LHA) layout edited has a default set of User-Defined Windows (UDW's) already programmed.

The defaults are determined by what vehicle is selected as well as what attachment is connected, if any.

Any changes to the run screen layouts are saved only for the current vehicle and attachment combination.

Guidance and GNSS windows

There are guidance and Global Navigation Satellite System (GNSS) windows available for the run screens and lower Left-Hand Area (LHA). The availability of the windows depends upon the software activations in the display.



RAPH22PLM0928BA 1

AFS AccuTurn window

The AFS AccuTurn automatic end of row turning feature improves machine efficiency by automatically plotting the best turn path to minimize “out of work” time during the turn.

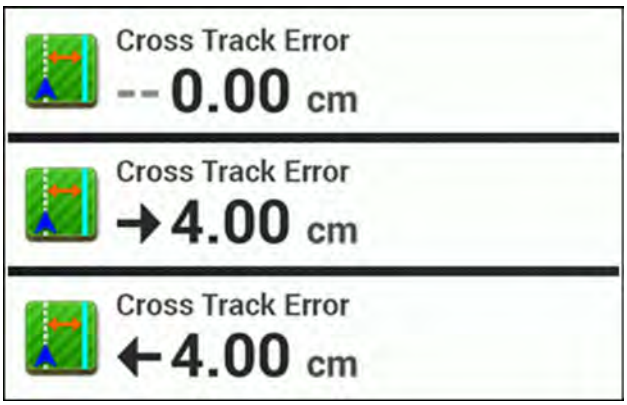
See “Introduction: AFS AccuTurn” (**5-145**) for more information.

RAPH23PLM0182AA 2

Cross Track Error

The “Cross Track Error” window reports the position of the vehicle relative to the desired swath. The window displays a right-arrow when the swath is to the right of the vehicle, or a left-arrow when the swath is to the left of the vehicle. The vehicle must move in the direction of the arrow to correct the alignment to the swath. The value appears in centimeters or inches depending upon the selected units of measurement.

NOTE: *The “Cross Track Error” window reports the cross track error value to the nearest centimeter (for metric units) or the nearest half-inch (for English units).*

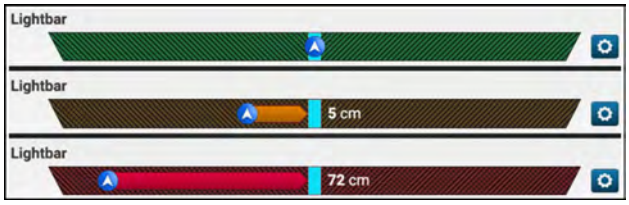


RAIL18PLM0187AA 3

Lightbar

The “Lightbar” window provides manual guided steering when operating in “Lightbar” mode. Three different states are shown in Figure **4**.

The functionality is the same as the “Lightbar” map widget. For more information, see “’Lightbar’ mode operation” (**5-144**).



NHIL20PLM0206AA 4

Nudge

The “Nudge” window provides a tool to compensate for drift in Global Navigation Satellite System (GNSS) position. Use the “Nudge” window to align the vehicle with the current swath.

RAPH21PLM1298AA 5

The “Nudge” window displays the value of the nudge. The arrow and the letters “L” or “R” indicate on which side of the swath line the vehicle is running. The number displays the distance.

The “left arrow” and “right arrow” buttons adjust the nudge value. The maximum nudge value is **1.5 m** (**5 ft**).

The “Set to current” button changes the nudge value to the value of the distance between the current swath and the current vehicle location.

The “Reset” button changes the nudge value to zero.

See “Adjust menu” (**5-113**) for information on using the nudge feature when driving with autoguidance.

Remark

Use the “Remark” window to adjust the recorded swath to the current position of the vehicle. Remark uses the recorded swath pattern at a new location and reports the distance from the recorded swath with the window. The new location is exactly parallel to the recorded swath location.

RAPH21PLM1297AA 6

The input field shows the distance from the recorded swath to the remarked swath. Left and right arrows point in the direction of the recorded swath relative to the remarked swath. A left arrow means the remarked location is to the left of the recorded swath. A right arrow means the remarked location is to the right of the recorded swath.

Press the “Set to Current” button to place the remarked swath at the vehicle position.

Press the “Reset” button to discard your changes.

The “Remark” window appears. The input field contains the current distance between the vehicle and the recorded swath.

Press the “Left” button **(1)** to configure the direction of remarked location to the left of the recorded swath.

Press the “Right” button **(2)** to configure the direction of remarked location to the right of the recorded swath.

Press the “Close” button **(3)** to discard your changes and close the dialog.

Press the “Save” button **(4)** to accept your changes. The “Confirm Changes” window appears.

RAPH23PLM1230BA 7

The two options in the “Confirm Changes” window are the “Save As” option and the “Overwrite Current Swath” option.

Use the “Save As” option if you plan to use the new swath again in the future. This saves the adjusted swath as a new swath in the field for later selection in future operations.

Selecting the “Overwrite Current Swath” option replaces the recorded swath with an adjusted one for the remainder of the current operation.

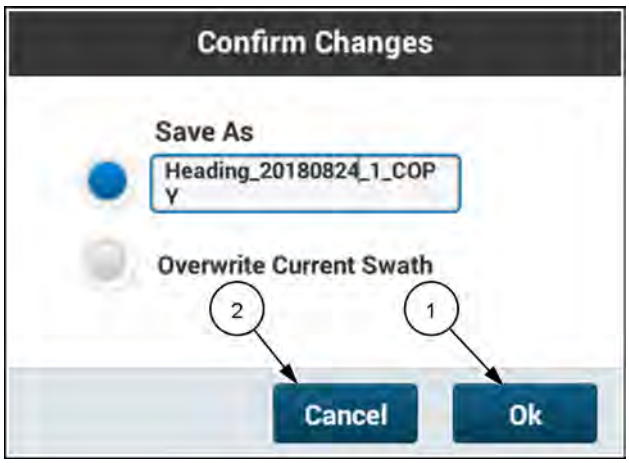
Press the applicable radio button to select the desired option.

RAIL18PLM1254BA 8

If you select the “Save As” option, you can rename the swath. Press the name field to bring up a keyboard. Rename the swath as needed.

Press the “Ok” button **(1)** to confirm the creation and naming of the new swath.

Press the “Cancel” button **(2)** to discard your changes.



RAIL18PLM1255BA 9

Selecting the “Overwrite Current Swath” option replaces the recorded swath with an adjusted one for the remainder of the current operation.

Press the “Ok” button **(1)** to confirm the creation and naming of the new swath.

Press the “Cancel” button **(2)** to discard your changes.

RAIL18PLM1256BA 10

Steering Aggressiveness

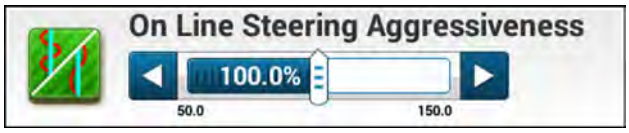
The aggressiveness setting controls how quickly the vehicle steers during automatic operation to keep the vehicle on-line when driving a swath or engaging on a swath. The aggressiveness setting allows the operator to adjust system performance for changing soil conditions, for vehicle equipment, or to improve operator comfort:

- A more aggressive (higher) setting results in a quicker and potentially jerkier response.
- A less aggressive (lower) setting results in a slower, smoother response.

Move the slider or press the arrows to adjust the steering aggressiveness.

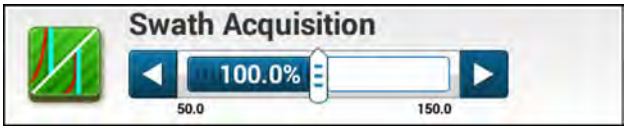
The acceptable range is from **50 – 150%**. **100%** is the default value.

See “Adjust on-line steering aggressiveness” (**5-111**).



NHIL20PLM0197AA 11

Swath Acquisition



NHIL20PLM0202AA 12

The basic “Swath Acquisition” setting controls how sharply the vehicle turns once autoguidance is engaged while the system is bringing the vehicle onto the swath. You can adjust system performance for headland depth, vehicle profile, and personal preference:

- A higher value results in the system using sharper turns to engage on the swath.
- A lower value results in the system using more gradual turns to engage on the swath.

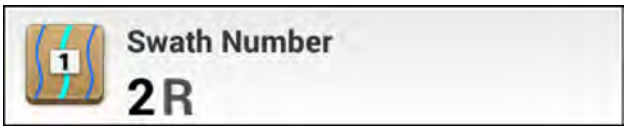
The range is from 50 percent to 150 percent, with the default being 100 percent.

Move the slider or press the arrows to adjust the steering aggressiveness.

The acceptable range is from **50 – 150%**. **100%** is the default value.

The adjustment is also available in the GNSS setup screen. For more information, see “Swath acquisition” (**5-109**).

Swath Number



NHIL20PLM1779AA 13

The “Swath Number” window reports the current swath that the vehicle is driving on relative to the recorded swath.

- If the swath is to the right of the recorded swath, the swath number is identified with an “R”.
- If the swath is to the left of the recorded swath, the swath number is identified with an “L”.

NOTE: *The direction (left or right) is always determined based on the heading of the original recorded swath.*

Precision Farming windows

Area counter

RAPH21PLM1004AA 1

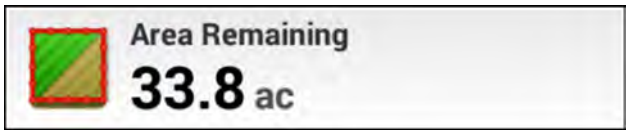
Location: Run screen, Left-Hand Area
Layout menu: Precision Farming
Label: “Area Counter”

The “Area Counter” window shows the running sum of the area covered until it is reset by the user. It does not reset when you change the task.

Press the “Reset” button to reset the value.

NOTE: *You can configure an armrest button to reset the area counter. See “Sprayer card configurable controls” (**3-23**).*

Area remaining

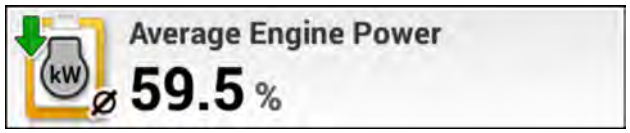


RAPH21PLM1005AA 2

Location: Run screen, Left-Hand Area
Layout menu: Precision Farming
Label: “Area Remaining”

The “Area Remaining” window indicates the difference between the field boundary area and the applied area worked for the current task. In the case where there is no outer boundary, this window displays dashed lines.

Average engine power

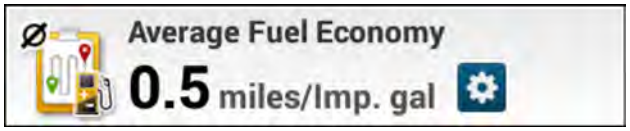


NHIL20PLM0550AA 3

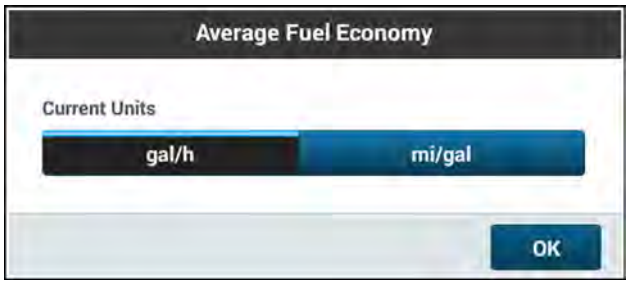
Location: Run screen, Left-Hand Area
Layout menu: Precision Farming
Label: “Average Engine Power”

The “Average Engine Power” window shows average engine load while in work during the current task.

Average fuel economy



NHIL20PLM0544AA 4



RAPH23PLM0385AA 5

Location: Run screen, Left-Hand Area
Layout menu: Precision Farming
Label: “Average Fuel Economy”

The “Average Fuel Economy” window shows the average fuel consumption of the vehicle while in work and road mode.

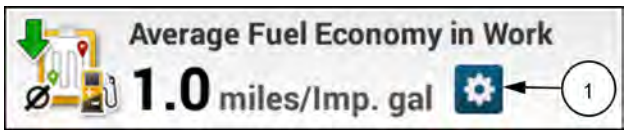
The average fuel economy can be viewed as distance per volume (km/L or miles/gal), or volume per hour (L/hr or gal/hr). The icon differs based on unit selection. Press the “gear” icon **(1)** to change the unit of measurement.

Average fuel economy in work

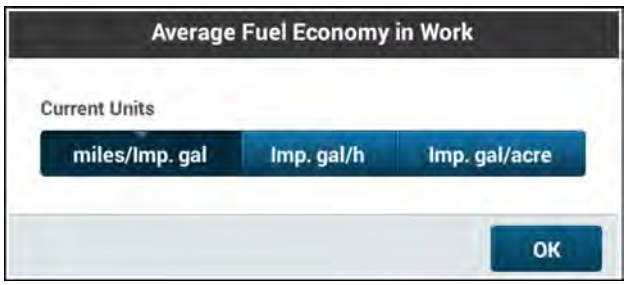
Location: Run screen, Left-Hand Area
Layout menu: Precision Farming
Label: “Average Fuel Economy in Work”

The “Average Fuel Economy in Work” window shows the average fuel consumption of the vehicle while in work.

The average fuel economy in work can be viewed as distance per gallon (km/L or miles/gal), volume per hour (L/hr or gal/hr), or volume per area (L/ha or gal/acre). Press the “gear” icon **(1)** to change the unit of measurement.



NHIL20PLM0543AA 6



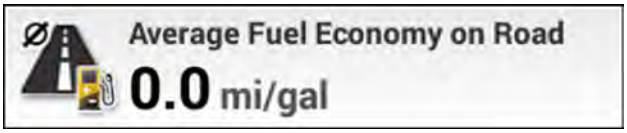
NHIL20PLM0546AA 7

Average fuel economy on road

Location: Run screen, Left-Hand Area
Layout menu: Precision Farming
Label: “Average Fuel Economy on Road”

The “Average Fuel Economy on Road” window shows the average fuel consumption of the vehicle while roading.

The average fuel economy on road can be viewed as distance per gallon (km/L or miles/gal), volume per hour (L/hr or gal/hr), or volume per area (L/ha or gal/acre).



RAPH21PLM1006AA 8

Average wheel slip in work

Location: Run screen, Left-Hand Area
Layout menu: Precision Farming
Label: “Avg. Wheel Slip in Work”

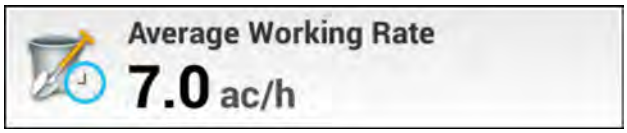
The “Avg. Wheel Slip in Work” window shows the average wheel slip while in work during the current task.

NHIL20PLM0549AA 9

Average working rate

Location: Run screen, Left-Hand Area
Layout menu: Precision Farming
Label: “Average Working Rate”

The “Average Working Rate” window shows the calculation of the total area covered while the implement is in work during the current task, divided by the time it has been in work.

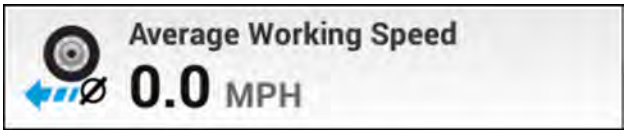


NHIL20PLM0541AA 10

Average working speed

Location: Run screen, Left-Hand Area
Layout menu: Precision Farming
Label: “Average Working Speed”

The “Average Working Speed” window shows the average speed while the implement is in work, during the current task.



RAPH21PLM1009AA 11

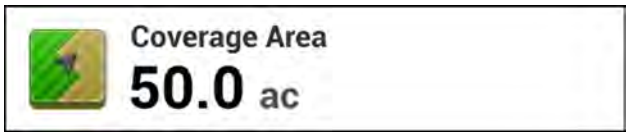
Boundary control

NHIL20PLM0073AA 12

Location: Run screen, Left-Hand Area
Layout menu: Precision Farming
Label: “Boundary Control”

The “Boundary Control” window allows you turn section control on and off when entering or exiting inner and outer boundaries.

Coverage area



NHIL20PLM0052AA 13

Location: Run screen, Left-Hand Area
Layout menu: Precision Farming
Label: “Coverage Area”

The “Coverage Area” window shows the sum of the areas covered by all of the controllers, minus the intersection areas. For example, if there are two different seed products being applied, along with a liquid product that spans the entire width of the implement, the three areas are added. Then, the total area of intersection between the liquid product and the seed products is subtracted to avoid double-counting the area of intersection.

NOTE: *This window was formerly named “As Applied Area.” The new name allows the window to support harvesting as well as seeding, planting, and other operations.*

Coverage logging

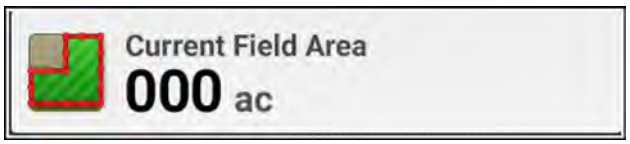
NHIL20PLM0060AA 14

Location: Run screen, Left-Hand Area
Layout menu: Precision Farming
Label: “Coverage Logging”

Use the “Coverage Logging” window when no work switch is available. When the logging switch is in the ON position, the system considers the applicator to be working. When there is a valid forward speed and the work switch is engaged, the applicator is in work and logs time in work, distance in work, etc. When the logging switch is in the OFF position, the applicator is out of work.

NOTE: *Manually turning coverage logging on with this switch is especially useful with a non-ISOBUS applicator.*

Current field area



NHIL20PLM0076AA 15

Location: Run screen, Left-Hand Area
Layout menu: Precision Farming
Label: “Current Field Area”

The “Current Field Area” window shows the total area of the outer boundary of the field minus the total areas of the enclosed inner boundaries.

Dashes appear when there is a recorded inner boundary but no outer boundary.

Distance Counter

Location: Run screen, Left-Hand Area
Layout menu: Precision Farming
Label: Distance Counter

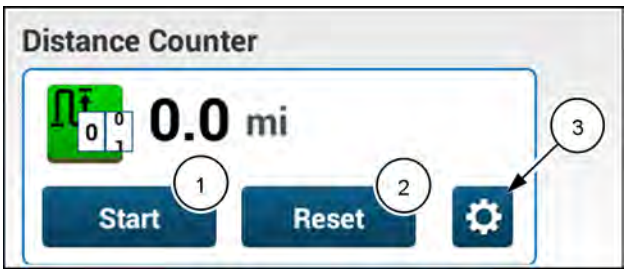
The “Distance Counter” window displays a trip odometer for any interval desired. It is not linked to any task or load.

Press the “Start” button **(1)** to start the counter at any time. Press the “Reset” button **(2)** to reset the counter.

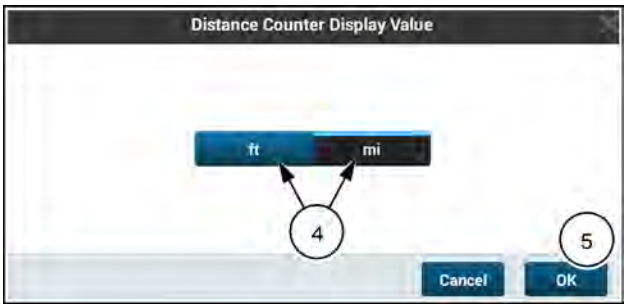
Press the "gear” button **(3)** on the UDW change the unit of measurement.

- Choose the units to display. **(4)**

Press the “OK” button **(5)** to apply your change and close the editing window.



NHPH23PLM0537AA 16



NHPH23PLM0538AA 17

Distance on road

Location: Run screen, Left-Hand Area
Layout menu: Precision Farming
Label: “Distance On Road”

The “Distance On road” window shows the total distance traveled while the vehicle is in road mode.

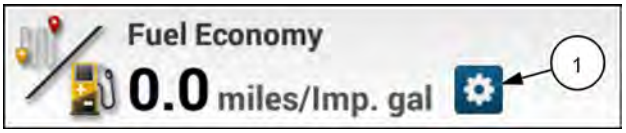
NHIL20PLM0061AA 18

Fuel economy

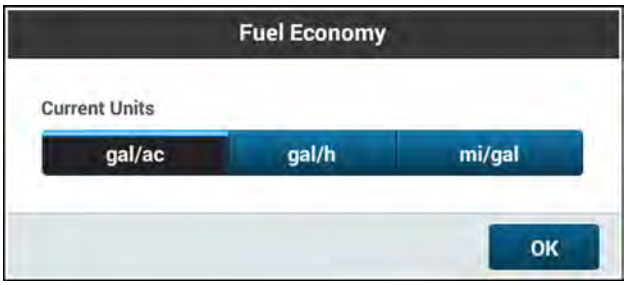
Location: Run screen, Left-Hand Area
Layout menu: Precision Farming
Label: “Fuel Economy”

The “Fuel Economy” window shows the instantaneous fuel consumption of the vehicle.

Fuel economy can be viewed as distance per volume (km/L or miles/gal), volume per hour (L/hr or gal/hr), or volume per area (L/ha or gal/acre). The icon differs based on unit selection. Press the “gear” icon **(1)** to change the unit of measurement.



NHIL20PLM0533AA 19

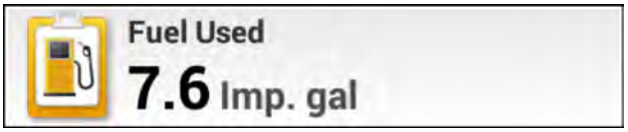


RAPH23PLM0386AA 20

Fuel used

Location: Run screen, Left-Hand Area
Layout menu: Precision Farming
Label: “Fuel Used”

The “Fuel Used” window shows the total amount of fuel used in work and out of work.

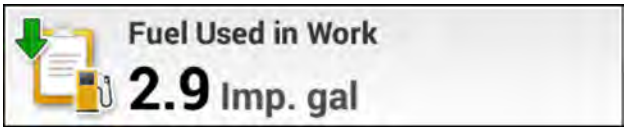


NHIL20PLM0534AA 21

Fuel used in work

Location: Run screen, Left-Hand Area
Layout menu: Precision Farming
Label: “Fuel Used In Work”

The “Fuel Used in Work” window shows the total amount of fuel used while in work during the current task.

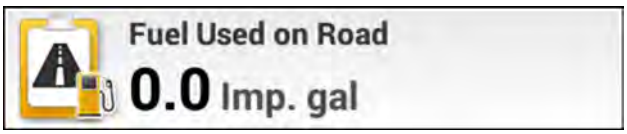


NHIL20PLM0535AA 22

Fuel used on road

Location: Run screen, Left-Hand Area
Layout menu: Precision Farming
Label: “Fuel Used on Road”

The “Fuel Used on Road” window shows the total amount of fuel used while in road mode.

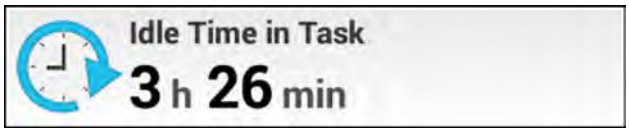


NHIL20PLM0536AA 23

Idle time in task

Location: Run screen, Left-Hand Area
Layout menu: Precision Farming
Label: “Idle Time in Task”

The “Idle Time in Task” window shows time spent during the current task when out of work.

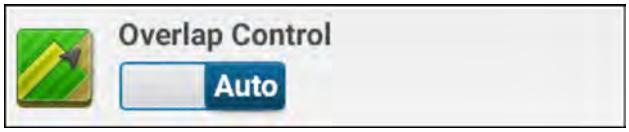


NHIL20PLM0532AA 24

Overlap control

Location: Run screen, Left-Hand Area
Layout menu: Precision Farming
Label: “Overlap Control”

The “Overlap Control” window allows you turn section control on and off when entering or exiting already-applied areas.



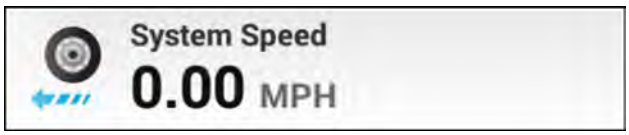
NHIL20PLM0074AA 25

System speed

Location: Run screen, Left-Hand Area
Layout menu: Precision Farming
Label: “System Speed”

The “System Speed” shows the speed received from the speed source that is configured in the “Vehicle/Implement Configuration” screen. The depicted icon changes based on the system speed source.

NOTE: *This window was formerly known as “Ground Speed.”*

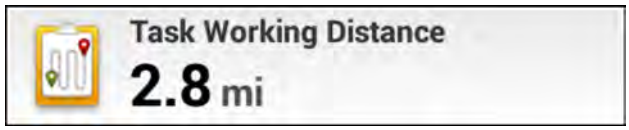


RAPH21PLM1010AA 26

Task working distance

Location: Run screen, Left-Hand Area
Layout menu: Precision Farming
Label: “Task Working Distance”

The “Task Working Distance” shows the total distance traveled while the implement is in work for the current task.

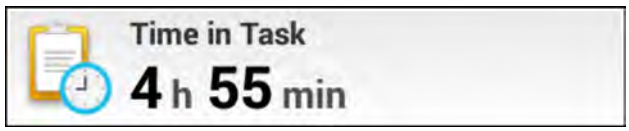


NHIL20PLM0531AA 27

Time in task

Location: Run screen, Left-Hand Area
Layout menu: Precision Farming
Label: “Time In Task”

The “Time In Task” window shows the total time spent in the current task in the current field.

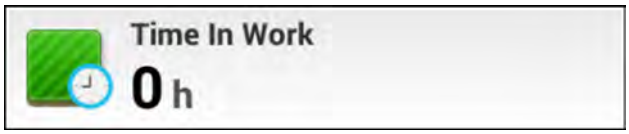


NHIL20PLM0530AA 28

Time in work

Location: Run screen, Left-Hand Area
Layout menu: Precision Farming
Label: “Time In Work”

The “Time In Work” window shows the total time the implement is in work during the current task.



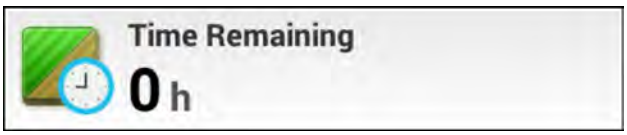
RAPH21PLM1011AA 29

Time remaining

Location: Run screen, Left-Hand Area
Layout menu: Precision Farming
Label: “Time Remaining”

The “Time Remaining” window shows the estimated time until task completion.

This is calculated from the area remaining and the average work rate.



NHIL20PLM0529AA 30

Time roading, in work, and idle

Location: Run screen, Left-Hand Area
Layout menu: Sprayer
Label: “Time Roading, Time In Work, Time Idle”

The “Time Roading, Time In Work, Time Idle” window shows the total amount of time for the vehicle for these three parameters during the current task.

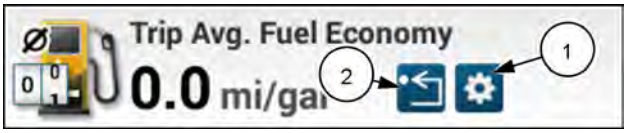
RAPH21PLM1393AA 31

Trip average fuel economy

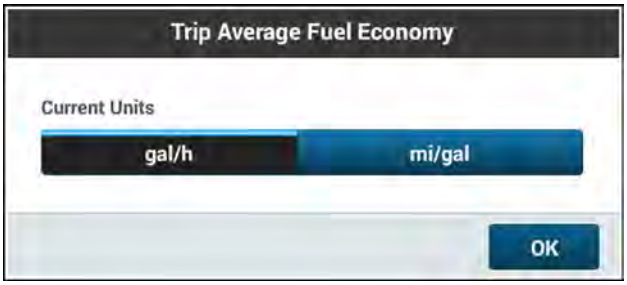
Location: Run screen, Left-Hand Area
Layout menu: Precision Farming
Label: “Trip Average Fuel Economy”

The “Trip Average Fuel Economy” window shows the average fuel consumption of the vehicle while in work and road mode.

Fuel economy can be viewed as distance per volume (km/L or miles/gal) or volume per hour (L/hr or gal/hr). Press the “gear” button **(1)** to change the unit of measurement. Press the “reset” button **(2)** to reset the value.



RAPH21PLM1003AA 32



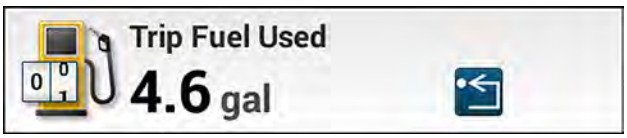
RAPH23PLM0387AA 33

Trip fuel used

Location: Run screen, Left-Hand Area
Layout menu: Precision Farming
Label: “Trip Fuel Used”

The “Trip Average Fuel Economy” window shows the total fuel consumption of the vehicle while in work and road mode.

Trip fuel can be viewed as volume (L or gal). Press the “reset” button to reset the value.



RAPH21PLM1002AA 34

Trip time roading, trip time in work, trip time idle

Location: Run screen, Left-Hand Area
Layout menu: Sprayer
Label: “Trip Time Roading, Trip Time In Work, Trip Time Idle”

The “Trip Time Roading, Trip Time In Work, Trip Time Idle” window shows the amount of time that has elapsed since the last time you reset the parameters to zero.

Press the reset button **(1)** to reset all three parameters to zero.

RAPH21PLM1394AA 35

Map windows and controls

The map windows provide a field map that allows the operator to:

- Create and manage swaths
- Create and manage boundaries
- Create and manage landmarks
- Adjust the zoom settings
- Adjust the map navigation settings
- Enable, disable, and manage map widgets
- Manage application and coverage map layers

The map can be placed on the run screen in four different sizes: 2x6, 1x6, 2x3, and 1x3. Each size has a different set of available features, raging from full-featured, full-screen map to quarter-screen, read-only map.

You can expand the 1x6, 2x3, and 1x3 map to the full size 2x6 to access all of the available menus.

When you expand a 1x3, 1x6 or 2x3 map, any view changes or other adjustments you made are saved. These changes and adjustments continue to be active even after the window has been collapsed down to it's original size.

The default zoom level for each window provides the same relative viewing area.

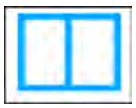
You cannot add a map as part of a group.

The maximum number of map instances on a single run screen is two.

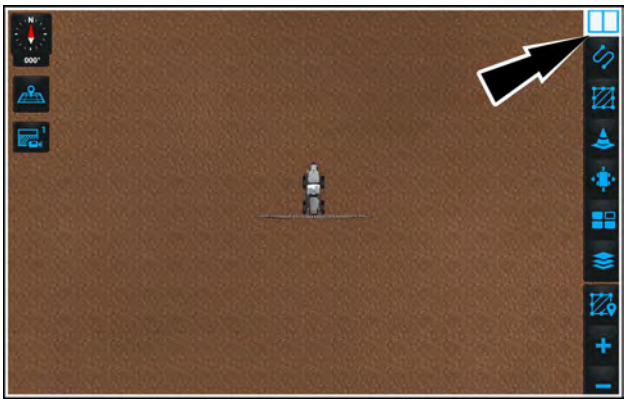
The maximum number of map instances allowed across all run screens is four.

Full screen map (2x6)

You can split a 2x6 map into two 1x6 maps. The icon in the top-right corner denotes a command to split the screen.



Press the icon to split the screen.

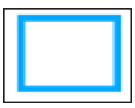


RAPH22PLM1748AA 1

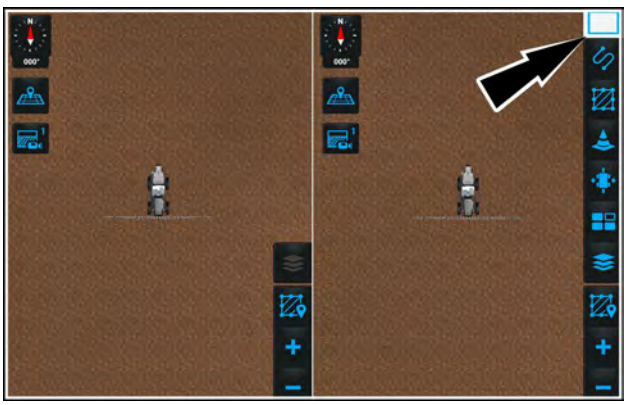
In a split screen all of the controls available in the full 2x6 map are available in the right-hand pane.

The following controls are not available in the left-hand pane:

- Swath
- Field
- Landmarks
- Swath adjust
- Widget



To return a split screen map to a 2x6 map, press the icon in the top-right corner of the map.



RAPH22PLM1760AA 2

If you place a 1x3, 2x3, or 1x6 map on the run screen, you can expand the map to full screen or collapse the map to its original size.

Press the icon to expand the map window to 2x6 size.

Press the icon to collapse the map window to its original size.

RAPH22PLM1750AA 3

The left menu of a 2x6, 1x6, or 2x3 map contains the following icons:

(1) – Compass

Press the compass to configure the orientation of the map. The map has two main orientations:

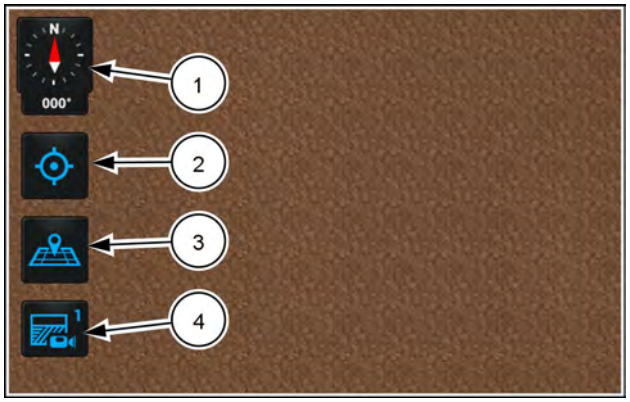
Vehicle heading up

North up

- **(2)** – Center/Zoom vehicle

  NOTE: *The Center/Zoom vehicle icon does not appear if the vehicle icon is already at the default center and zoom settings.*

- **(3)** – View orientation – toggle between top view and angled view
- **(4)** – Custom map view 1. See “Custom map view” below for more information.



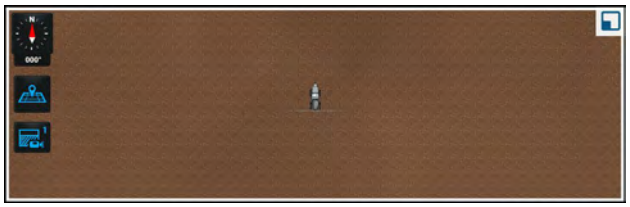
RAPH21PLM1038AA 4

Half screen map (2x3)

You can place a half screen 2x3 map on the run screen.

You can expand the half screen 2x3 map to the full screen 2x6. The expanded map can only collapse to the original half screen 2x3 size.

When you collapse the 2x6 map to a 2x3 map, the left-hand menu remains identical to the left-hand menu in the 2x6 map. However, the right-hand menu is not visible in the 2x3 map.



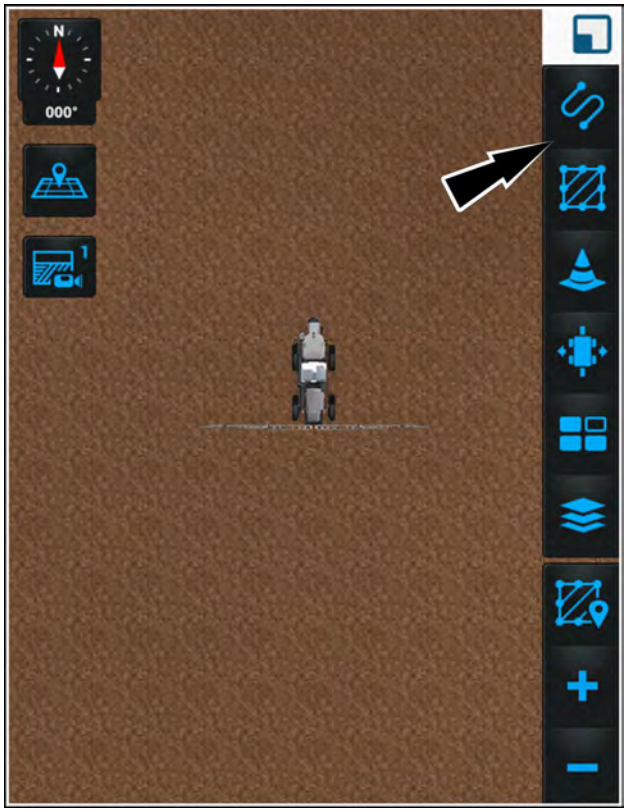
RAPH22PLM1756AA 5

Half screen map (1x6)

You can add a 1x6 map to the runscreen. A 1x6 map has all of the same functionality as a 2x6 map, except for the items below:

The following items are not available for recording in the 1x6 map window. However, they are available for viewing and management functions:

- Multi-Swath
- Headland
- Boundary
- Field Swath



RAPH22PLM0930BA 6

Quarter-screen map (1x3)

You can add a 1x3 map to the runscreen. The controls on the 1x3 map are limited to:

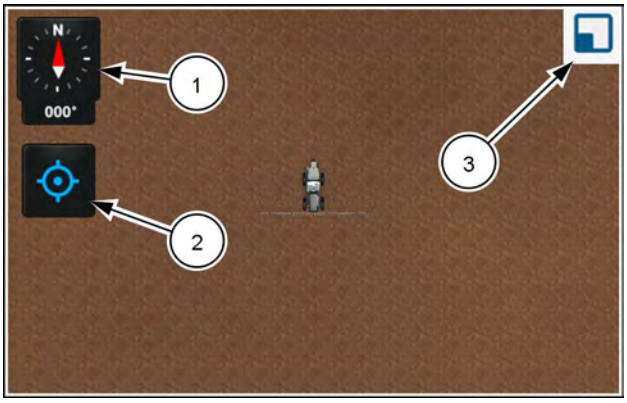
(1) – Compass widget

(2) – Centering icon

The 1x3 map has all of the gesture functionality that the larger maps have, such as pinch-to-zoom.

Press the expand icon **(3)** to expand the map to a 2x6 full screen map.

The edit panel does not appear in a 1x3 quarter screen map. However, any recording session continues after collapsing to a 1x3 window. You cannot collapse a larger map to a 1x3 quarter screen map while there is a dialog open.

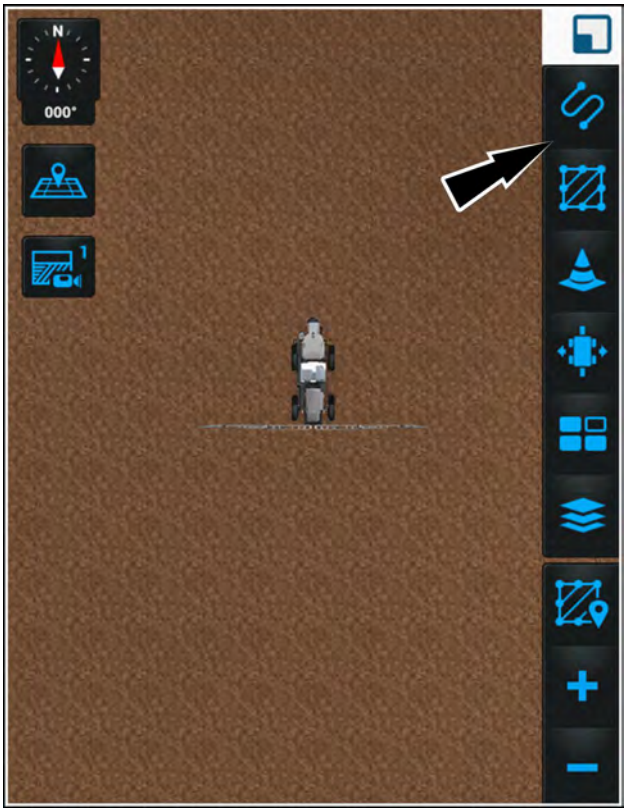


RAPH22PLM1758AA 7

Opening menus in a map

Use the buttons on a map to open menus and use maps. Press the button to open the menu.

This example shows the use of the map controls to create a guidance line or swath. For more information, see the “FIELD MAPPING” chapter (**5-2**).



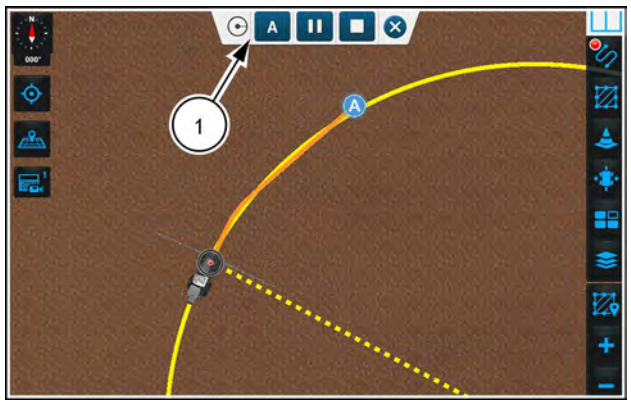
RAPH22PLM0930BA 8

If you press a right-hand menu icon that has a key icon on it, a popup appears. The popup states, “You do not have the necessary activations to be able to use this feature. Please contact your dealer for support.”

See “Unlocks and activations” (**3-58**) for more information.

RAIL18PLM1583AA 9

The edit panels and tabs **(1)** are configured for the function that you select in the right-hand menu of a map. Depending upon the swath type, different buttons will appear in the recording menu. This example shows a pivot swath being recorded.



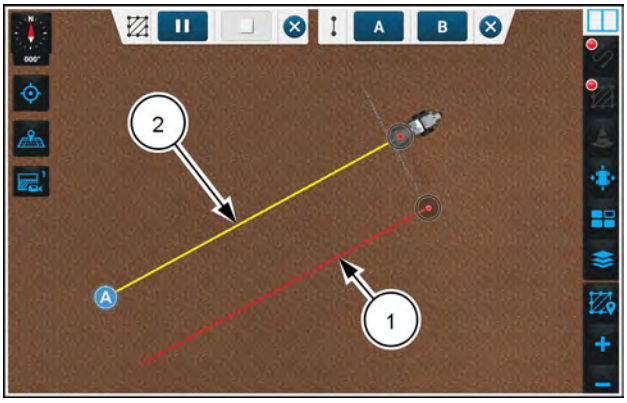
RAPH22PLM1759AA 10

Multi-recording

You can record multiple types of map objects simultaneously in a map window. For more information, see “Multiple recordings” (**5-81**).

In this example, the system is recording both a boundary **(1)** and a swath **(2)**.

While recording a swath and a boundary simultaneously, you can also record a point landmark. To record a point landmark while multi-recording, press the vehicle icon on the map. For more information, see “Landmarks” (**5-127**).



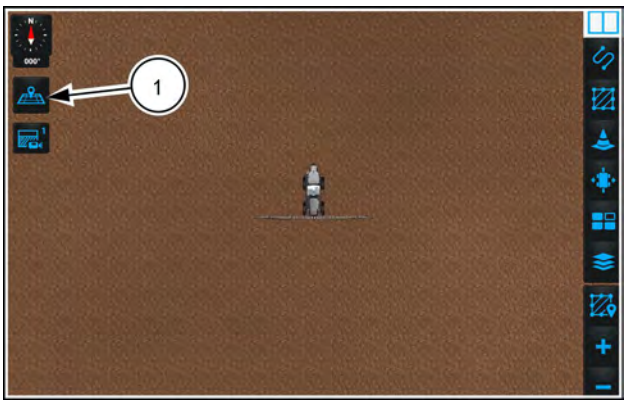
RAPH22PLM1761AA 11

Map views

The first time you add a map window of any size, the default map view is the overhead view. The vehicle symbol is in the centered position on the map. The default zoom level depends upon the vehicle and the boom.

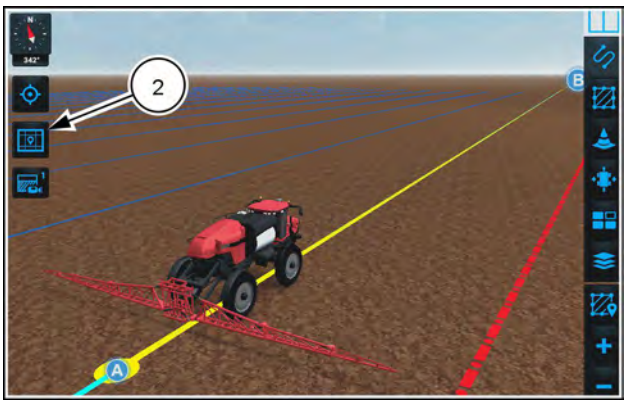
When the map is in overhead view, the “perspective view” icon **(1)** appears in the left-hand menu in the map.

When the map is in perspective view, the “overhead view” icon **(2)** appears in the left-hand menu in the map.



RAPH22PLM1748AA 12

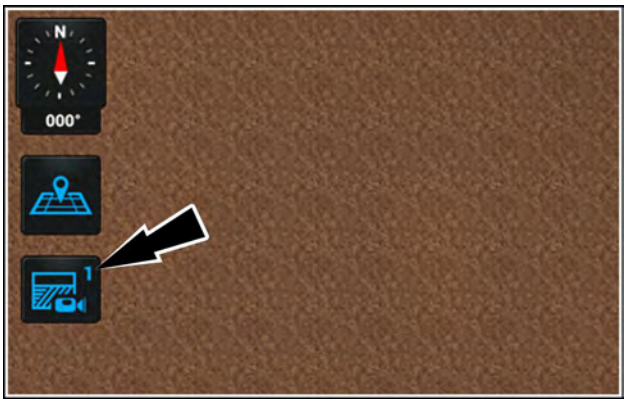
Both views allow you to pan, zoom, and rotate the view around the vehicle and the attached implement, applicator, or header in any direction.



RAPH21PLM1247AA 13

Custom map views

You can save a custom map view for viewing angle, zoom level, and relative orientation of the vehicle symbol to heading. Long-press the custom view icon to save the current map configuration.



RAPH21PLM1039AA 14

The “custom view” icon changes color. A message temporarily appears in the map confirming the custom view change.

RAIL18PLM0130AA 15

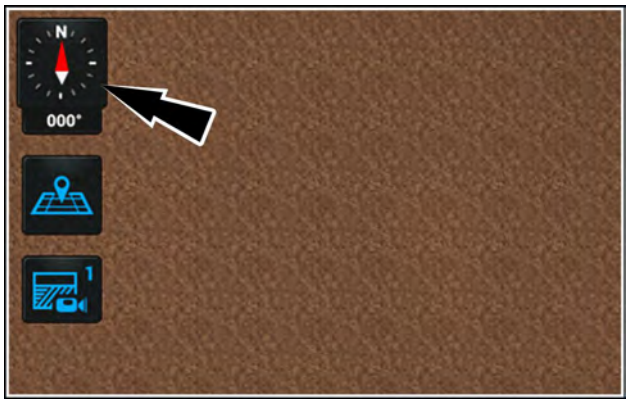
If you press a “custom view” icon when there are no saved views available, a message appears that informs you.

RAIL18PLM0131AA 16

Compass icon

The “Compass” icon consists of two sections. The top section is the compass needle that denotes direction. The bottom section gives the heading of the compass as a numerical heading in degrees.

The default configuration of the compass is locked to the north.



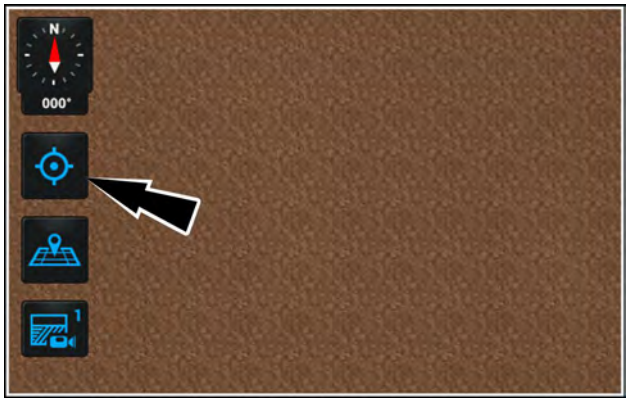
RAPH21PLM1039AA 17

The needle in the “compass” icon is red when it is locked to the north. In this mode the orientation of the map always faces north. The vehicle icon points to the actual vehicle heading. Press the “compass” icon to unlock it.

The needle in the “compass” icon is blue when it is unlocked and points to the vehicle heading. In this mode the orientation of the map follows the forward heading of the vehicle. The vehicle icon always points straight up. Press the “compass” icon to lock it.

Re-center map icon

Panning or zooming can take the map away from the vehicle symbol. The “re-center” icon moves the map to locate the vehicle symbol to the center of the map. The zoom level does not change.



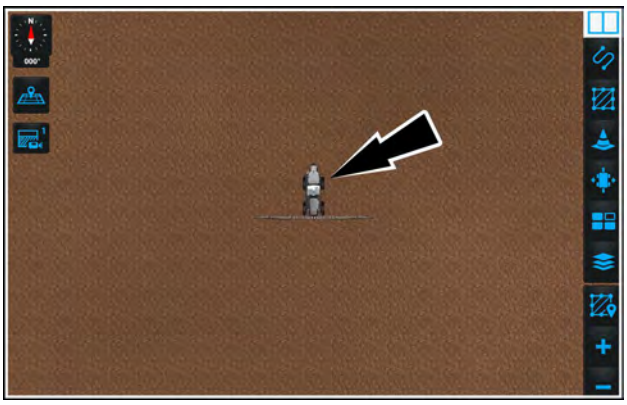
RAPH21PLM1038AA 18

Press the “re-center” icon to center the map over the vehicle symbol.

NOTE: *This icon disappears from the map when the vehicle symbol is centered on the map and is already at the default zoom level.*

After you re-center the map, the “re-center” icon becomes a “Zoom” icon. Press the “Zoom” icon to see the default zoom level.

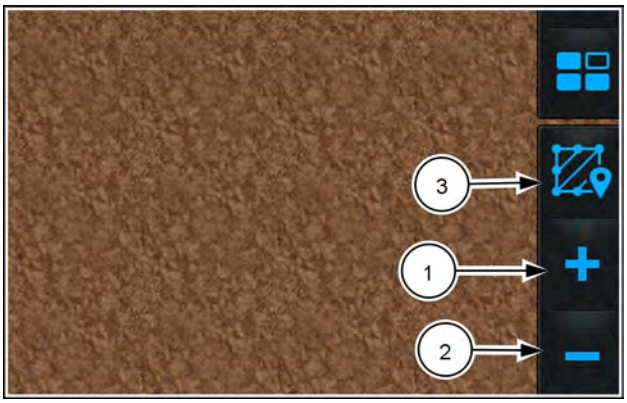
The “Zoom to Vehicle” icon disappears. The vehicle and the attached implement, applicator, or header appear centered at default zoom level for the vehicle and the attached implement, applicator, or header combination.



RAPH22PLM1748AA 19

Zoom controls

The zoom icons at the bottom of the right-hand menu allow you to zoom the map in or out on the vehicle symbol.



NHIL20PLM0181BA 20

Press the “zoom in” button **(1)** to zoom in on the map and increase the attached implement, applicator, or header width on the map by one width at a time.

Press the “zoom out” button **(2)** to zoom out from the map and decrease the attached implement, applicator, or header width by one width at a time.

Press the “zoom to field” icon **(3)** to zoom out to a point where the field boundary fits fully inside the map.

The “zoom to field icon” may also behave differently:

- If there is no recorded boundary, the map zooms to display the coverage data.
- If there is no coverage data, the map zooms to display any obstacle data.
- If there is no information to zoom on, the default map view appears.

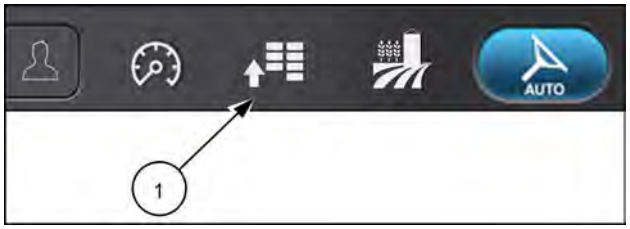
"Activations"

"Activations" card

Locked features require an activation that you can purchase individually or purchase in a bundle, depending on your needs. Activations are separate from the purchase of your display.

Some features require multiple activations for you to fully unlock and use. In these cases, the features will not be fully available until you purchase all of the required activations. Depending on the your machine or display type, certain activations or features may not be available for use.

Press the button **(1)** on the top bar to navigate to the “Menu” screen. Press the “Settings” tab, if necessary.



RAIL19PLM0121AA 1

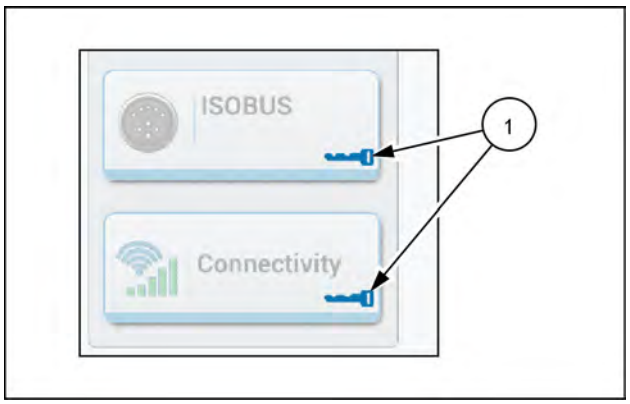
Press the “Activations” button to access the “Activations” setup card.

NHIL18PLM0159AA 2

The “Activations” setup card allows you to:

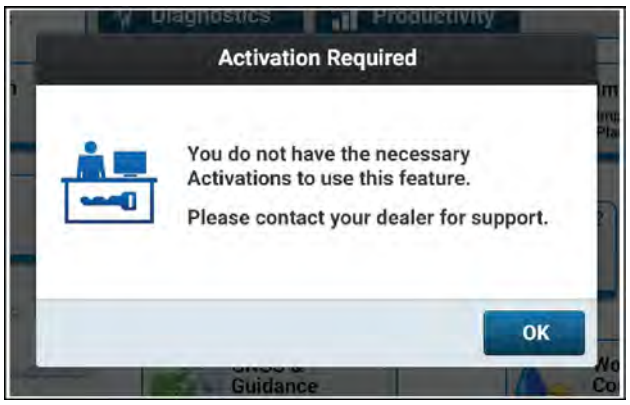
- Add new activation codes to unlock features
- Manage existing activation codes

Locked features appear grayed out with an “Activation Required” icon **(1)** shaped like a key in the bottom right corner. The “Activation Required” icon can appear on locked features in the ”Settings” tab of Menu” page, the map User-Defined Window (UDW), the top bar, and the card related to the locked feature.



RAPH22PLM1655AA 3

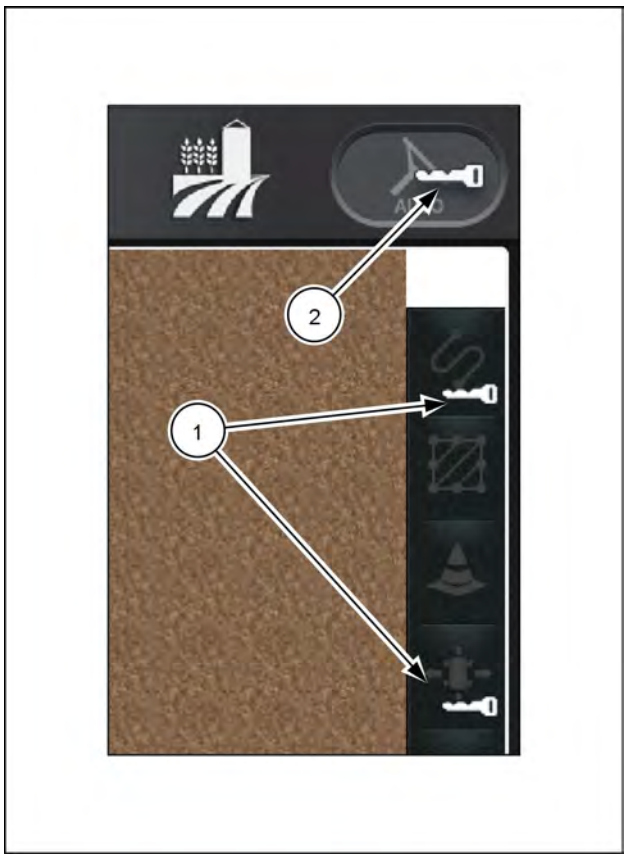
If you try to access a locked feature, the display opens an “Activation Required” window stating “You do not have the necessary activations to use this feature. Please contact your dealer for support.”



NHIL18PLM0175AA 4

In the Map User-Defined Window (UDW), “Activation Required” icons identify the selections that require an activation.

In this example, “Activation Required” icons **(1)** appear on the swath icon and the nudge/trim icon because autoguidance is not activated. An “Activation Required” icon **(2)** also appears on the guidance engagement status icon.



RAIL19PLM0619BA 5

Unlocks and activations

An activation refers to any feature upgrade for which there is a one-time cost. Most activations activate a suite of features instead of only one feature.

Most features requiring activation have a trial version, known as a “demo,” available that is active for a limited time.

Activation codes have encrypted information that makes the applicable feature permanently available for use. The term “unlock” is sometimes used interchangeably with “upgrade” or “activation.”

Activations are not to be confused with subscriptions. Subscriptions are billed periodically for use in off-board connectivity applications. Your farming operation may require subscriptions for higher accuracy correction sources.

If a feature requires an activation, “Activation Required” icons appear over controls in the display.

Activation messages inform you that the system does not have the necessary activations. You must contact your CASE IH dealer if you wish to activate the feature.

RAIL19PLM0619BA 1

If you press a control with an “Activation Required” icon over it, an “Activation Required” window or dialog bubble opens on the display. If you press a tab for a feature that has not been activated, the tab opens with an activation message. Menu items appear grayed out with an “Activation Required” icon.

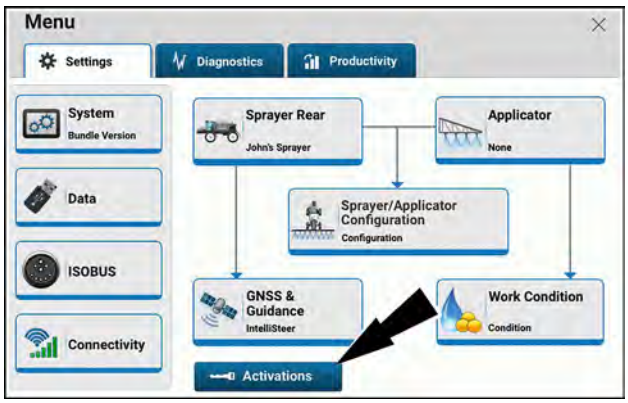
RAIL19PLM0130AA 2

Activations with activation code

To activate a feature using an activation code, first contact your CASE IH dealer to purchase the necessary activation code.

Once you obtain the activation code, press the “Activations” button on the “Setup” menu.

The “Activations” screen opens.



RAPH21PLM1122AA 3

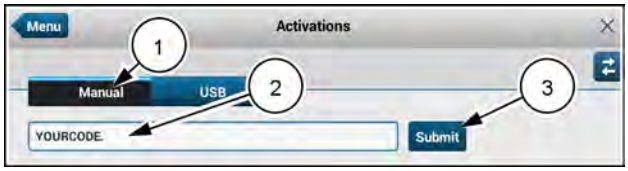
If needed, press the “Manual” button **(1)**.

Enter the activation code into the “Code” field **(2)**.

NOTE: *When entering activation codes for the AFS VectorPro receiver, always enter the full and complete activation code* ***(1)****, including commas.*

Press the “Submit” button **(3)**.

An activation popup opens. Acknowledge the activation.



RAPH23PLM0389AA 4

Activations with USB device

In general, activating features with a USB memory device should be used as a backup method to activating features with activation codes sent over-the-air. For accuracy activations in the Global Navigation Satellite System (GNSS) receiver, you must always send the activation code over-the-air, or enter the activation code manually on the “Activations” screen.

Activation error

In the unlikely event of an error, such as a mistyped code, an “Activation window opens stating the type of error and instructions for resolving the error.

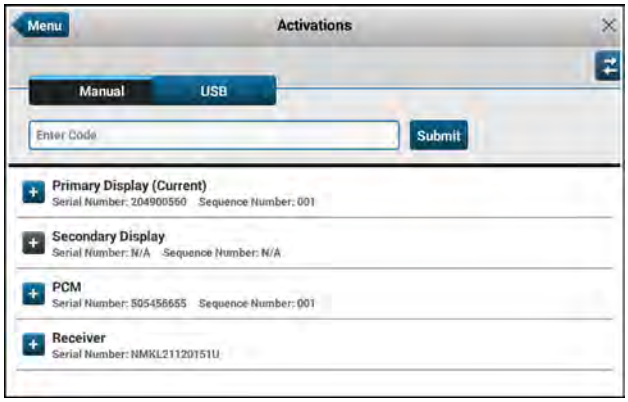
Consult your CASE IH dealer if you cannot resolve the error.

RAIL19PLM0139AA 5

Activation categories and statuses

The “Activations” screen lists the activations by category according to the affected component in your vehicle.

Each feature that is available for activation in each category is listed under the expand buttons. The status of each feature is also shown.



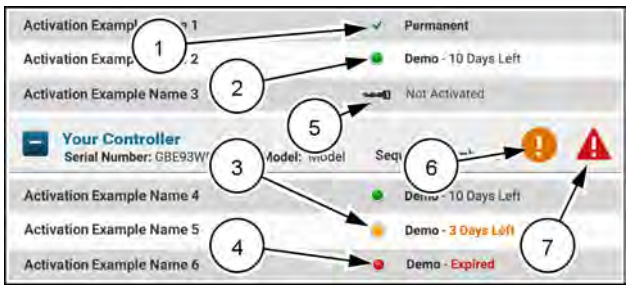
RAPH23PLM0388AA 6

Activation statuses are represented by icons. Icons that inform you of pending or surpassed expirations appear in the row of the affected controller.

The status and notification area also gives an activation status when an activation is expired or close to expiration.

The possible activation statuses are as follows:

Item	Icon	Description
(1)		Permanent
(2)		Demo
(3)		Demo nearing expiration
(4)		Demo expired
(5)		Not activated
(6)		Subsystem with demo nearing expiration
(7)		Subsystem with expired demo



RAIL19PLM0143AA 7

"Operations" screen

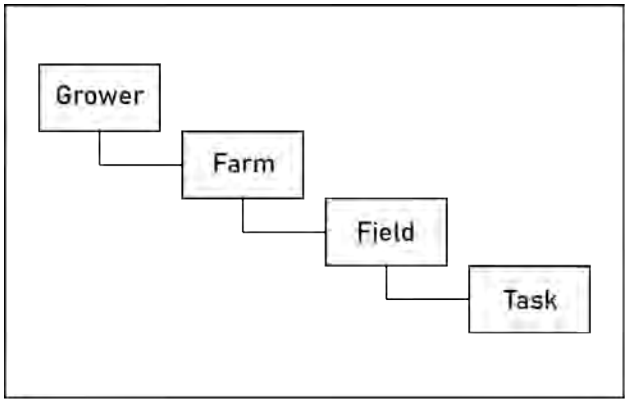
"Operations" screen

The “Grower,” “Farm,” “Field,” and “Task” windows are the basic building blocks of the telematics and mapping functions. These windows are also the primary filters for viewing application results.

With the exception of tasks, the information for the windows can be created on the display and shared between vehicles. Task information is vehicle-specific and can only be entered on the display.

RAPH23PLM0082AA 1

The selections in the windows on the “Operations” screen describe the active data set for which production results are logged. The windows are grouped on the “Operations” screen for easy access. Items in the “Operations” screen are presented in a manner that assists you in performing all of the necessary configurations required in a task. You can work in the “Operations” screen from the top down. Links to other relevant windows appear in the “Operations” screen menus.



RAPH21PLM1115AA 2

The data set has a hierarchical structure. You cannot select an item lower on the hierarchy until all of the items above it in the hierarchy are selected:

- For each grower, there can be many farms.
- For each farm, there can be many fields.
- For each field, there can be many tasks.
- The task is the lowest level in which data is stored.

If there is no selected grower, the grower, farm, and field spaces are populated by dashes.

If there is a selected grower but no farm is selected, the farm and field spaces are populated by dashes.

If there is a selected grower and farm, but no field is selected, the field space is populated by dashes.

NOTE: *In some early software versions, the respective grower, farm, and field spaces are populated by “No Grower,” “No Farm,” and “No Field” instead of dashes.*

RAPH23PLM0083AA 3

Grower

Data collected on the display is organized for your farming operations by growers, farms, fields, and tasks.

A grower is an independent agri-business.

A grower may work a single farm or many farms. A grower may also provide contract services – planting, spraying, harvesting – to other growers.

As such, the grower is always linked to a farm to enable the user to view all crop operations for an individual grower.

To add, edit or create a grower with the display, press the “Grower” field **(1)** to access the drop-down.

NOTE: *If no growers are available, the only option is the “Add New” button.*

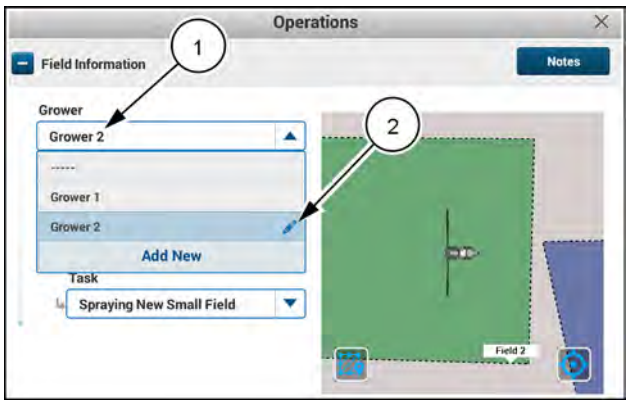
If you wish to change the grower, press the “Grower” drop-down list.

“Edit” icon - If you wish to edit a grower, press ”Edit” icon **(2)** to open the keyboard. The edit window opens with the keyboard. Use the keyboard to edit the grower name.

Press the “Apply” button **(3)** to accept your changes and close the keyboard.

NOTE: *A grower can only be created or changed when the vehicle is not working – that is, no data is being collected. When you create a new grower, the “Farm” and “Field” windows are blank since there are no farms or fields. When you change the grower, the “Farm” and “Field” windows display the last farm and the last field that you used for that grower. Only the farms and fields associated with the grower are available for selection.*

NOTE: *This image is for illustrative purposes only. Applications differ.*



RAPH23PLM0092AA 1

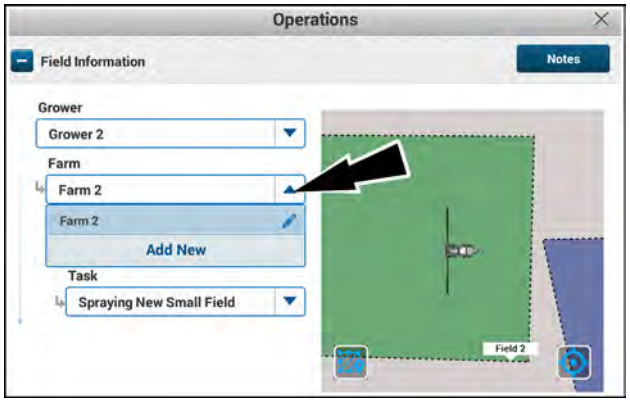
Farm

To the display and the desktop software, a farm is a large geographical entity that is composed of smaller entities called fields. All crop production tasks occur within a field that is defined by GNSS coordinates.

As such, all crop production tasks are linked to a field, and the field is linked to a farm.

Editing the “Farm” selection is similar to editing the “Grower” selection as described in “Grower” (**3-62**).

NOTE: *This image is for illustrative purposes only. Applications differ.*



RAPH23PLM0093AA 1

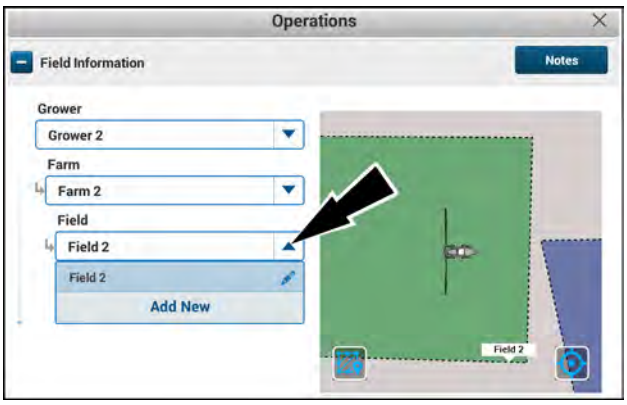
Field

A field contains one crop type this season. Next season, the same field may contain a different crop type. In areas where two crops per growing season are typical, the same field may contain two different crop types in the same season.

The display and the desktop software treat the field as a geographical container in which the crop tasks and production data are recorded for this season. The crop tasks and their production results have a relatively short life span when compared to the life span of the field and farm. Therefore, the field, task, and crop type are independent.

Editing the “Field” selection is similar to editing the “Grower” selection as described in “Grower” (**3-62**).

NOTE: *A field cannot be created or selected until a “Farm” selection is made.*
A field can only be created or changed when the vehicle is not working – that is, no data is being collected.



RAPH23PLM0094AA 1

When you enter the “Operations” screen for the first time in a session, the zoom level in the mini-map centers on the current vehicle location and displays the nearest field boundaries.

You can use your fingers to pan and pinch/zoom the mini-map to display all field and coverage boundaries.

You can use either the drop-down menu or the mini-map to choose a field. To use the mini-map to select a field, press the desired field.

RAPH23PLM0095AA 2

The currently selected field in the “Field” drop-down menu appears green in the mini map. Other fields appear blue.

You can pinch the mini-map to zoom out to view all of the detected fields. When you zoom out enough, the field boundaries turn into blue dots. The red dot indicates vehicle location. The green dot indicates the current active field.

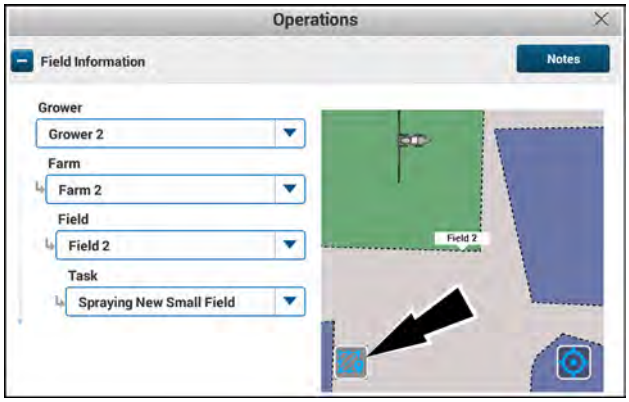
RAPH23PLM0089AA 3

You can press the “Vehicle Location” icon to show the current vehicle location, and the active field location. The active field appears green on the map.

RAPH23PLM0097AA 4

You can press the field location icon to center the mini map on the active field. The vehicle does not appear in the mini map if it is too far away from the center point on the active field.

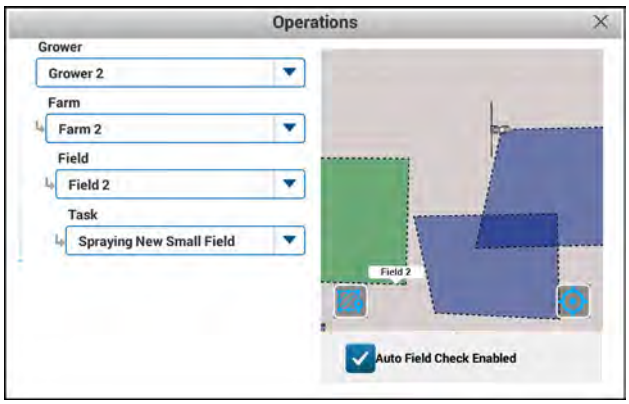
You can zoom out if needed to see where the inactive fields and the vehicle are relative to the center of the active field.



RAPH23PLM0096AA 5

It is possible for active and inactive fields to overlap in the mini-map.

Any additional boundaries that you make while a task is selected are added to the active field, whether or not the new boundaries overlap with the active field.



RAPH23PLM0098AA 6

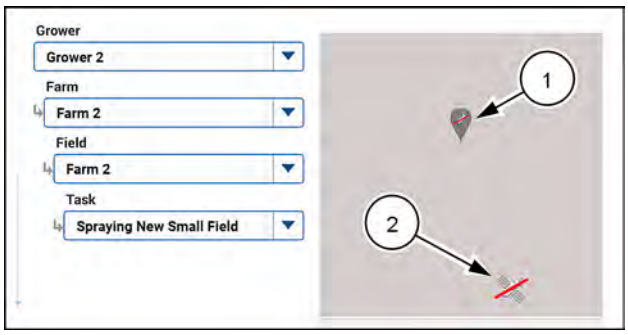
If a field has no recorded boundary or coverage data, but has other geo-spatial data, a single field point appears showing the first geo-spatial point that you recorded. Swaths and landmarks can appear in this geo-spatial data.

If a field is unworkable for any reason, the field appears gray in the mini-map.

If you lose the GNSS signal, “GNSS Signal Lost” icons appear in the mini-map. Press the “GNSS Signal Lost” icon **(1)** that appears on the vehicle to see a popup message that states, “GNSS Signal Lost. Last known position of your vehicle.”

If the GNSS signal is still lost after a key cycle, the “GNSS Signal Lost” icon on the vehicle is no longer present. The “GNSS Signal Lost” icon **(2)** at the bottom of the mini-map is still present to remind you of the loss of the GNSS signal.

You can press the “GNSS Signal Lost” icon **(2)** to see a message that informs you of the situation.



RAPH23PLM0100AA 7

Auto Field Check

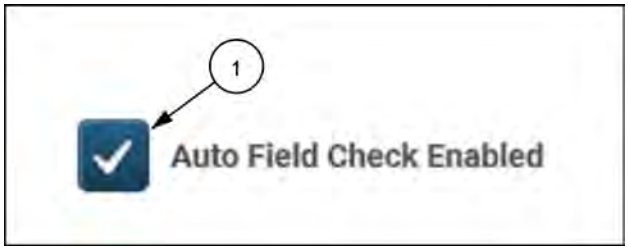
When the “Auto Field Check” feature is enabled, the system will automatically prompt you to change fields if you enter the boundary of a field other than what is currently selected on the “Operations” screen.

To enable the “Auto Field Check” feature, press the check box **(1)** below the mini-map.

As you enter a field that is not the currently selected field, the pop-up window appears.

Press the “Yes” button **(1)** to select the field that you crossed into.

Press the “No” button **(2)** to retain the current field selection.



NHIL20PLM0623AA 8

NHIL20PLM0624AA 9

Task

A task can be thought of as a work event in the display. It is both a description of work to be performed and the associated logs of the completed work. Tasks can be created on the display, either automatically by the system or by the user. Tasks can be imported from a Farm Management Information System (FMIS).

A task is the performance of work (with an implement or header) on a specific crop type in one field of one farm for one grower.

A new task is automatically created when a field is created. You can edit the name of the task as needed, or keep the default name.

There is one task per operation or instance for a given field. All of the task data is stored in one file of unlimited size.

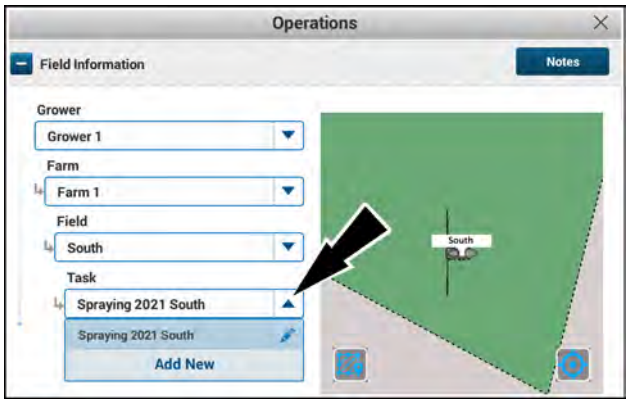
If you create a new task for a field, all of the coverage data for that field is cleared.

The “Task” drop-down shows the list of all of the available tasks for the currently selected grower, farm, and field.

When you select a task for a second and subsequent times, the automatically-prefilled work condition for that task is recalled.

Editing the “Task” selections is similar to editing the “Grower,” “Farm,” and “Field” selections as described in “Grower” (**3-62**).

NOTE: *This image is for illustrative purposes only. Applications differ.*



RAPH21PLM1304AA 1

"Notes" window

You can save notes to the active task. The “Notes” window provides selectable options that are commonly noted to tasks.

Each task has one note assigned to it. You can edit this note as needed.

In the “Operations” screen, press the “Notes” button. The “Notes” window appears.

Some of the note options have drop-down lists **(1)** to aid in noting the option. If there is no drop-down list, press the text field **(2)** and use the numeric keypad that appears to enter the numeric information.

The “Notes” window provides a text box **(3)** into which you can enter comments as you need to. Press the “Enter Notes” field to obtain a keyboard. Use the keyboard to enter your notes.

RAPH22PLM1709AA 1

Press the “Apply” button **(4)** to accept your changes and close the “Notes” window.

Press the “Cancel” button **(5)** to discard your changes and close the “Notes” window.

Sprayer/applicator configurations

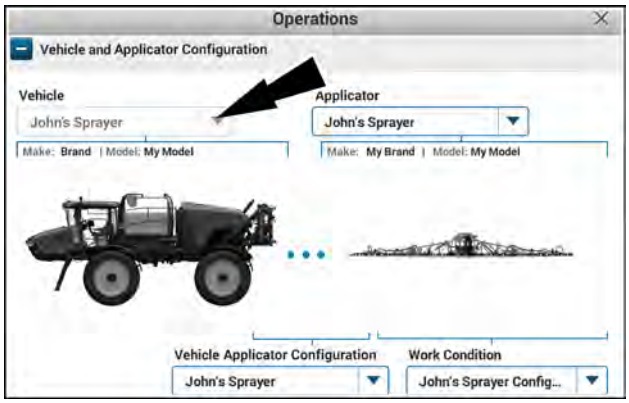
One component of a task is the vehicle-applicator combination. To build a task, you must specify the vehicle and applicator in the ”Vehicle and Applicator Information” section.

When you select a vehicle from the “Vehicle” drop-down list in the “Operations” screen, the system attempts to auto-detect the applicator. If no applicator is auto-detected, you will be prompted to select or create the currently active applicator.

When you select an applicator, the system attempts to auto-detect the vehicle. If no vehicle is auto-detected, you will be prompted to select or create the currently active vehicle.

“Vehicle” menu

The “Vehicle” menu displays your vehicle name, make, and model. The information is read-only.



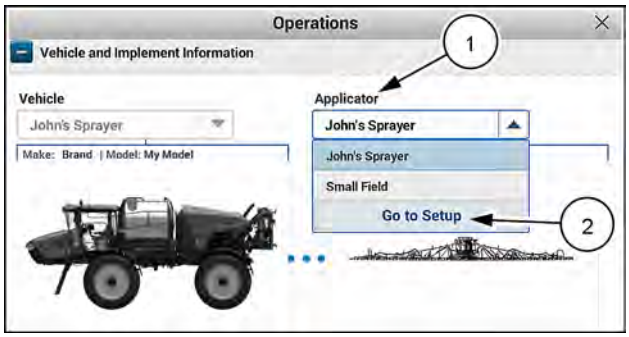
RAPH21PLM1107AA 1

“Applicator” menu

Open the “Applicator” drop-down menu **(1)**. Select the desired applicator.

NOTE: *If the system has detected an ISOBUS applicator, the “Applicator” drop-down menu is read-only.*

If you wish to set up a new applicator that does not appear in the drop-down list, press the “Go to Setup” link **(2)**. The “Applicator” card appears with the “Settings” tab open. See “Applicator settings” (**4-64**).



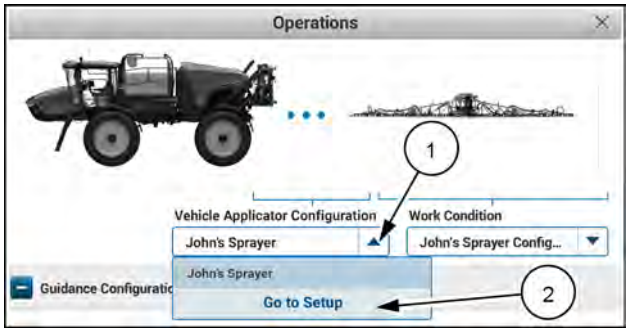
RAPH21PLM1119AA 2

“Vehicle-Applicator Configuration” menu

The vehicle-applicator configuration consists of the combination of the vehicle and applicator. This configuration includes the method by which the software detects that the applicator has been placed in “work” state for farming data collection purposes. The configuration also includes the speed source priority that is used for farming data collection.

Open the “Vehicle-Applicator Configuration” drop-down menu **(1)**. Select the desired vehicle-applicator configuration.

If you wish to set up a new vehicle-applicator configuration that does not appear in the drop-down list, press the “Go to Setup” button **(2)**. The “Vehicle/Applicator Configuration” card appears. See “Sprayer/applicator configurations” (**3-68**).



RAPH21PLM1120AA 3

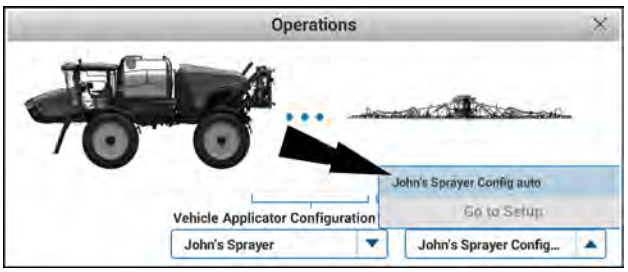
“Work Condition” menu

The “Work Condition” menu adds product configurations that are built in the “Work Condition” windows.

Open the “Work Condition” drop-down menu. Select the desired work condition.

If you wish to set up a new work condition that does not appear in the drop-down list, press the “Go to Setup” link. The “Work Condition” card appears with the “Product Control” tab selected.

For more information, see “Work Condition card” (**4-75**).

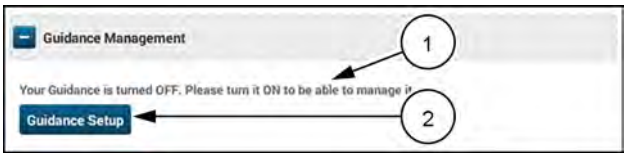


RAPH21PLM1118AA 4

Guidance management

You can configure multiple guidance profiles in the “Guidance Management” section of the “Operations” screen. These guidance profiles contain calibration information that teaches the autoguidance system the unique characteristics that affect steering performance. Changes to implements, tire configurations, and other factors affect steering performance, depending upon vehicle type. The ability to save guidance configurations for use in tasks eliminates the need to perform autoguidance calibrations each time you configure the vehicle.

To configure the autoguidance for the selected task, the autoguidance must be operating. If the autoguidance is not operating, the “Guidance Management” section displays a message **(1)** and provides a “Guidance Setup” button **(2)**.

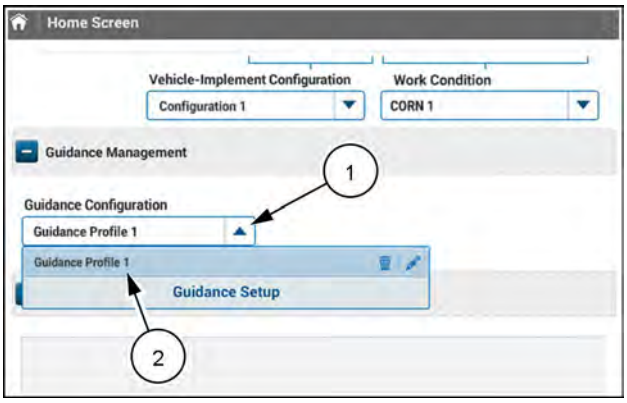


RAIL18PLM1656AA 1

To turn on the autoguidance, press the “Guidance Setup” button. The “GNSS & Guidance” window appears with the “Guidance” tab selected. See “Guidance screen” (**3-37**).

Press the “Guidance Configuration” drop-down menu **(1)**.

Select from the available guidance configurations **(2)**.

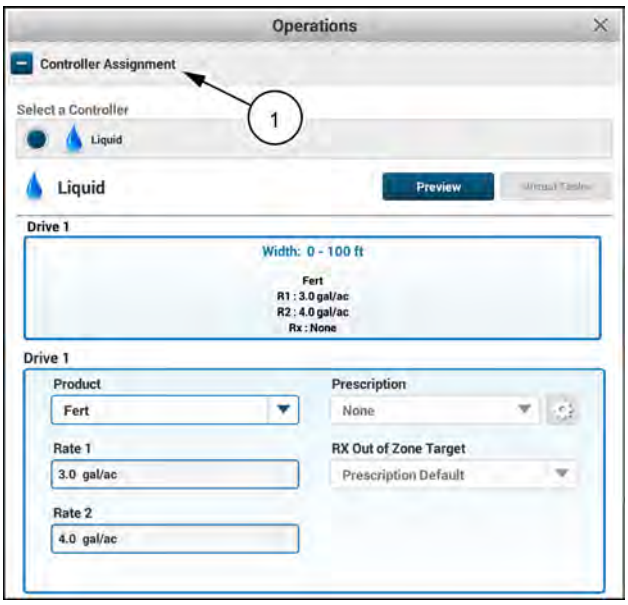


NHIL19PLM0257AA 2

Product assignment

NOTE: *Depending on the version of software, this section may be named "Application assignment" or "Product Assignment."*

The "Controller assignment" section **(1)** on the "Operations" screen is used to assign prescriptions, set product rates, and use virtual tanks. For more information, see "Assign controllers and adjust rates or targets" (**5-185**).



RAPH22PLM0917BA 1

If you begin working with no product assigned to an active controller, a notification appears, and no coverage or application data will be logged. Press the "Jump To" button **(2)** to go to the "Operations" screen and assign products to the drives.

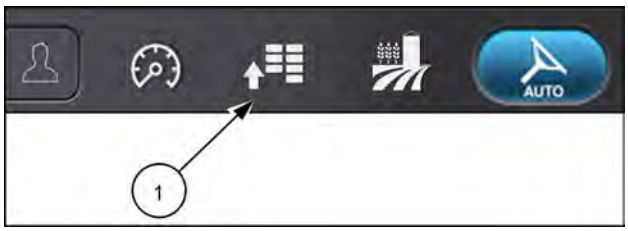
NHIL20PLM0555AA 2

4 - SETUP

Introduction

"Menu" screen

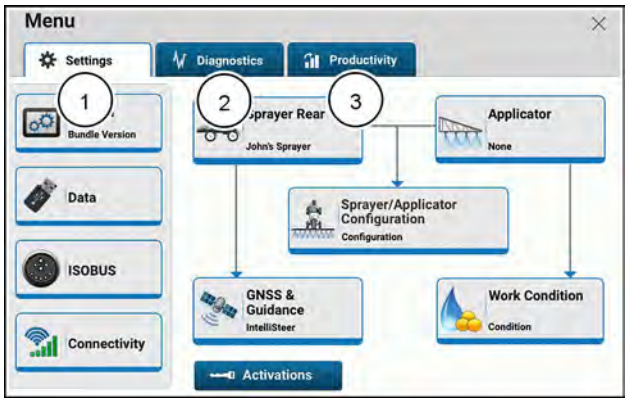
Press the button **(1)** on the top bar to navigate to the “Menu” screen. Press the “Settings” tab, if necessary.



RAIL19PLM0121AA 1

On the “Settings” screen **(1)**, you will find the “cards,” or screens, for system setup of your guidance and telematics system.

- For information on the “Diagnostics” screen **(2)**, see “Machine diagnostics” (**6-5**).
- For information on the “Productivity” screen **(3)**, see “Productivity reports” (**5-207**).



RAPH21PLM1122AA 2

NOTE: *If the cards are grayed out with key overlay, then you must purchase the applicable activation or unlock from your CASE IH dealer. See “Activations and unlocks” (**3-56**).*

“GNSS & Guidance” setup card (4-3)

Access the “GNSS & Guidance” setup card to:

- Setup your receiver
- Configure your correction sources
- Output serial position data

NHPH22PLM0543AA 3

Applicator card (4-63)

Access the “Applicator” setup card to:

- Configure your general applicator settings
- Configure your applicator measurements
- Setup application controllers

RAPH21PLM1074AA 4

“Work Condition” setup card (4-75)

Access the “Work Condition” setup card to configure product control and overlap/boundary settings.

RAPH21PLM1113AA 5

"Data” setup card (7-1)

Access the “Data” setup card to:

- Manage field data such as grower-farm-field, tasks, prescriptions, swaths, boundaries, landmarks, map layers, and crop types
- Manage user profiles, implements, vehicles, and connectivity information
- Import and export data from your display and vehicle
- Manage your product library
- Synchronize your data with the web portal

NHIL20PLM0744AA 6

"Connectivity Diagnostics” setup card (4-91)

Access the “Connectivity Diagnostics” setup card to select “External” or “Internal” for the following antennas:

- Cellular
- GNSS
- Wi-Fi
- **Bluetooth®**

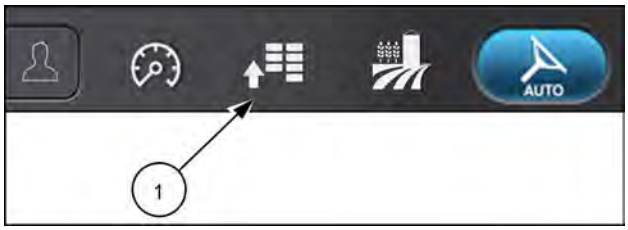
NHIL19PLM0610AA 7

GNSS receiver and guidance setup

"GNSS & Guidance" card

NOTE: *You can configure an armrest button to open the "GNSS & Guidance" setup card. See "Sprayer card configurable controls" (**3-23**).*

Press the "Menu" button **(1)** on the top bar to navigate to the "Menu" screen. Press the "Settings" tab, if necessary.



RAIL19PLM0121AA 1

Press the "GNSS & Guidance" card to open the "GNSS & Guidance" setup card.

NHPH22PLM0543AA 2

The "GNSS & Guidance" setup card allows you to setup the GNSS receiver and, if equipped, your autoguidance system. The setup card contains four main screens: GNSS, Guidance, Measurements, and Calibrations.

The "GNSS" screen contains information related to:

- Correction signal configuration for base, medium, and high accuracy correction sources, as well as RTK Fill and accuracy setup.
- Feature setup for GNSS smoothing and correction transition.
- Output configuration for **NMEA 0183®** standard serial messages, and **NMEA2000®** standard Controller Area Network (CAN) messages.
- Third-party receiver setup

The "Guidance" screen contains information related to:

- Guidance type selection
- Guidance configuration
- Steering aggressiveness setting and swath acquisition
- Steering options

The "Measurements" screen allows you to configure GNSS and vehicle measurements for:

- GNSS antenna location
- Vehicle wheel base, track spacing, and axle dimensions

The "Calibrations" screen allows you to perform:

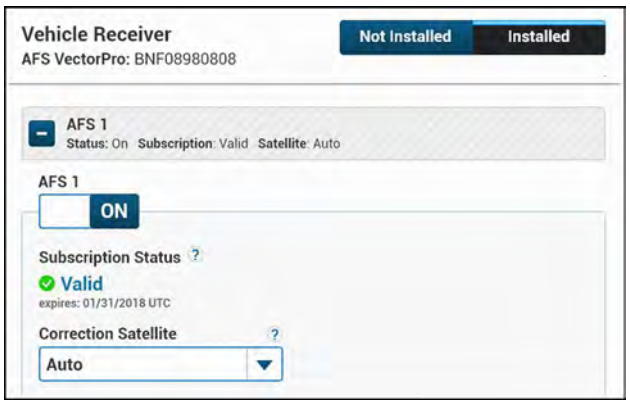
- Automatic roll calibration
- Manual roll calibration

"GNSS" screen

The “GNSS” screen is composed of several collapsed menus for each type of correction source, as well as menus for accuracy setup and position output. For each menu, the screen displays the current status and any other relevant information for that feature.

The “GNSS” screen also allows you to set the GNSS receiver to “Installed” (enabled) or “Not Installed” (disabled).

NOTE: *Set the receiver to “Not Installed” when the receiver is removed from the vehicle to suppress any errors and avoid confusion. The receiver should also be set to “Not Installed” if the receiver is installed on the vehicle but not configured or ready to use.*



RAPH22PLM0143AA 1

To setup your correction source and other GNSS settings:

- “RTK” – See “Real-Time Kinematic (RTK) corrections overview” (**4-5**) and the pages that follow for your specific radio module or cellular connection.

  If RTK is not activated, the padlock symbol will show and the menu selection will be grayed out. Contact your dealer to purchase an activation code. See “”Activations” card” (**3-56**) for additional information.
- “AFS Correction” (AFS 1, AFS 2, AFS 3) – See “AFS corrections setup” (**4-30**).
- “SBAS” – See “Satellite-Based Augmentation System (SBAS) corrections setup” (**4-33**).
- “Accuracy Setup” – See "Accuracy setup” (**4-35**).
- “GNSS Position Output” – See “"GNSS Position Output" menu” (**4-37**).

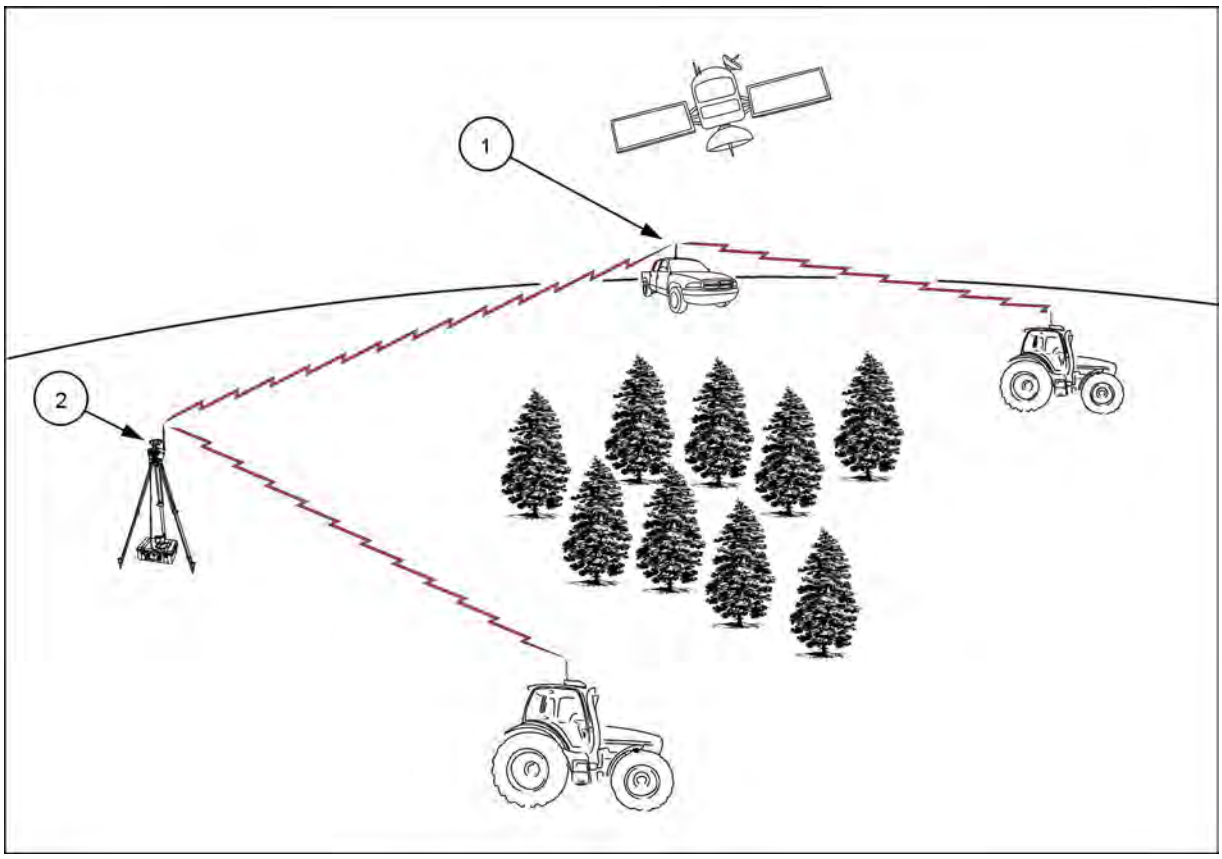
Multi-Constellation availability

The receiver is capable of accessing signals from several constellations, such as GPS, GLONASS, BeiDou, and Galileo.

More constellations result in a larger number of satellites in the field of view which, in turn, will:

- Improve convergence time.
- Allow for more consistent accuracy when operating near obstructions such as buildings and trees.
- Reduces issues caused by ionospheric scintillation, which occur most severely in regions that are near the equator (within 20 degrees above or below the geomagnetic equator).

Real-Time Kinematic (RTK) corrections overview



NHIL19PLM0643FA 1

Base station components

The Real-Time Kinematic (RTK) base station **(2)** allows for high accuracy correction signals to be sent to multiple autoguidance-equipped vehicles at the same time.

The autoguidance-equipped vehicle has its own receiver for the satellite signal and a radio receiver to receive the local information from the base station.

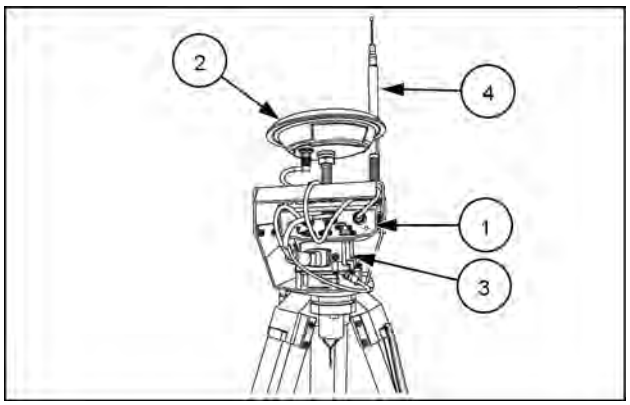
Figure **1** depicts a portable radio repeater **(1)** mounted on the top of a pickup truck with a magnetic antenna mount. The radio repeater re-transmits the correction signal, so that the vehicle receives the same correction from either the repeater or the base station. The repeater can re-transmit the correction signal around terrain such as over hills, into valleys, or around large obstructions. This eliminates the common problem of using more than one base station, which can result in a shift in the position of the vehicle.

In some operations, RTK radio corrections provide an advantage over cellular-delivered RTK corrections.

RTK base stations:

- Work in areas with poor cellular coverage for periods longer than 20 minutes.
- Provide the most accurate position when the base station position is closest to the vehicle.
- Provide high accuracy and availability using multi-constellation technology.
- Allow for ownership and control over the base station, without a subscription cost.
- Allow for multiple vehicles to use the same base station, providing a cost-effective differential correction source for your entire guidance-equipped fleet.

The RTK base station consists of a Global Navigation Satellite System (GNSS) receiver **(1)**, a GNSS antenna **(2)**, an RTK radio module **(3)**, and a radio antenna **(4)** for communicating with multiple autoguidance-equipped vehicles at the same time.



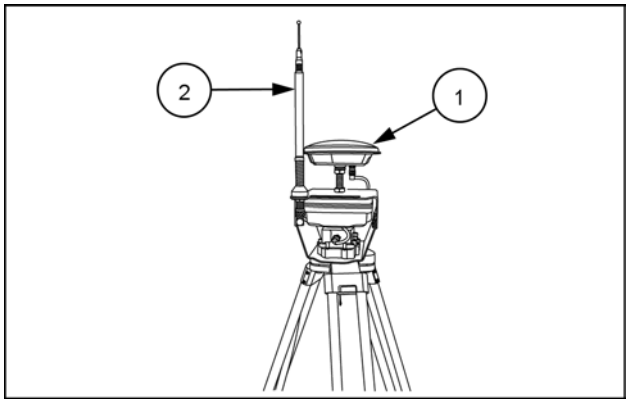
NHIL18PLM1696AB 2

Some planning is needed to pick the optimal location or locations for the base station(s) during field work. Your CASE IH dealer is available to assist you with a site survey.

The GNSS antenna **(1)** is the component that requires the most attention when picking locations. The location must have a clear view of the sky, away from metal structures and trees.

For maximum repeatability and accuracy, fixed installations for the GNSS antenna are recommended, such as installed on a permanent post set in concrete below the frost line.

NOTE: *For portable base stations on a tripod, use a plumb bob or other means to verify the exact position of the GNSS antenna position.*



NHIL18PLM1708AB 3

The radio antenna **(2)**, mounted with the same bracket as the GNSS antenna, is second in importance since it must remain in communication with the vehicle throughout the field. The radio antenna does not need to be mounted near the GNSS antenna, and should be mounted at the highest point possible to achieve maximum range.

The location of the receiver, case, and battery power supply are a matter of convenience.

Consider these factors when choosing field positions for the base station:

- The position must offer clear communication between the broadcast radio antenna and the receiver on the vehicle throughout the field. In general, use line of sight as a guide. If you cannot see the radio receiver on the vehicle when it is at the lowest point of a field or behind a rise from the antenna height position, the broadcast may be lost at those locations.
- The position must offer a clear view of the sky, away from or above buildings or other large objects that can reflect signals.
- The support for the antenna must be sturdy and solid, to prevent movement and tipping from normal wind or rain during field work.
- The position must be repeatable – easily located from season to season, year to year.
- The position must be away from vehicle traffic patterns to prevent accidental contact.

NOTE: *The base station must be set up and operating before a successful connection between the vehicle and the base station is possible.*

Finally, test a location before you commit to it. Base station components are portable and lend themselves to experimentation.

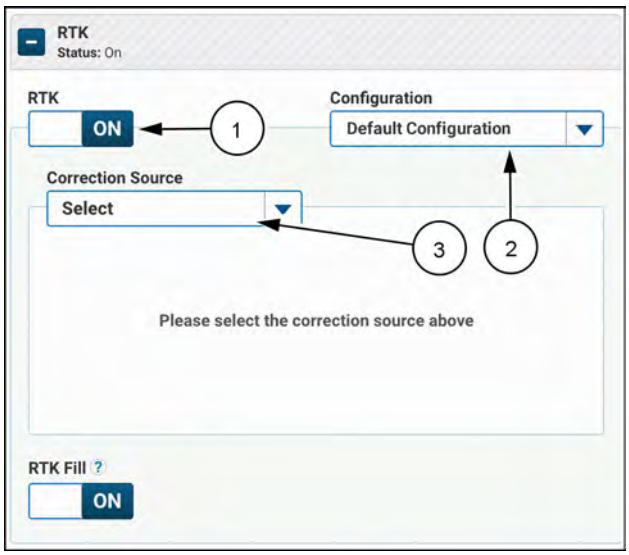
The Real-Time Kinematic (RTK) correction sources use cellular-based or radio-based technology to deliver high-accuracy correction signals to the vehicle receiver. The RTK correction sources are only active with the high accuracy unlock and the applicable subscription.

The information shown for the RTK menu is as follows:

- On or off status **(1)**
- Configuration selection **(2)**
- Correction selection **(3)**

If you have not yet accessed or setup the RTK correction source, then the “Correction Source” selection will display “Select”. Press the drop-down menu to select a correction source.

NOTE: *The RTK correction source cannot be turned on without the high accuracy display unlock.*



NHIL20PLM0783AA 4

The following RTK correction sources are compatible:

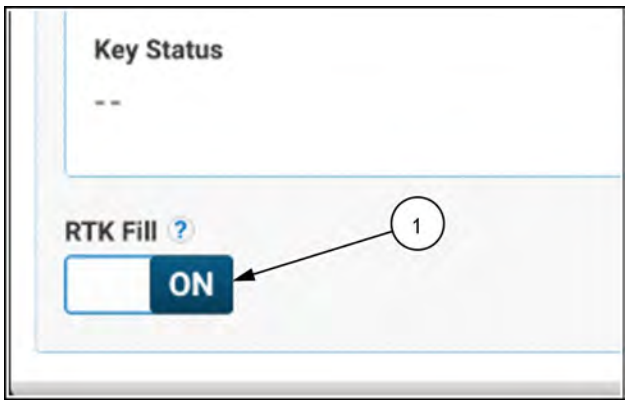
- AFS RTK+ – Cellular communication with the AFS RTK+ network using the onboard modem
- NTRIP – Cellular communication with an accessible network using the onboard modem
- AFS VectorPro RTK – Internal radio module
- AFS VectorPro X-RTK – External radio module
- Generic External RTK Device – External device, typically a radio or **Bluetooth®** dongle that provides a serial RTK correction

RTK Fill

During signal interruptions with the cellular or RTK radio link, the “RTK Fill” feature **(1)** keeps the RTK solution in fixed mode while maintaining a high level of accuracy:

- The RTK Fill, once enabled, engages when the RTK correction outage is greater than 10 seconds.
- RTK Fill will continue to provide corrections for up to 20 minutes. Once the RTK operation resumes, the countdown resets back to 20 minutes. If the RTK corrections are not recovered within 20 minutes, then RTK Fill will disengage and the GNSS receiver will automatically switch to the next best correction type.
- When RTK corrections are restored, you may experience a small movement back to a more accurate position, within the normal RTK accuracy.

CASE IH recommends that you leave RTK Fill enabled (“ON”).



NHIL19PLM0668AA 5

RTK Fill Pro

NOTE: *At this publication the RTK Fill Pro service is not available in all global markets.*

The RTK Fill Pro service is similar to RTK Fill service with the following exceptions:

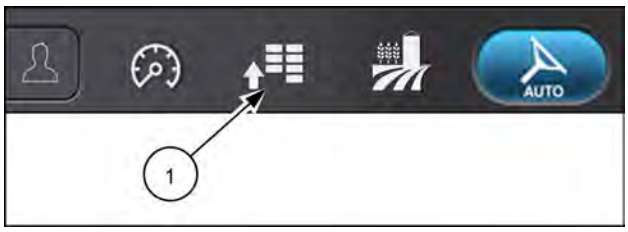
- You can engage the RTK Fill Pro feature without RTK base or network coverage.
- There is no 20-minute time limitation or countdown. Coverage is unlimited.
- Automatically compensates for datum differences and other biases to the RTK solution.
- The subscription has no expiration date.

Real-Time Kinematic (RTK) corrections setup - 900 Mhz radios

NOTE: *Make sure that the appropriate Real-Time Kinematic (RTK) radio module is installed, and that the display contains the proper activations for RTK corrections.*

NOTE: *When you change RTK configurations, the configurations that were in the system are removed and cannot be recovered. This includes the default configurations present in a new software installation.*

Press the menu button **(1)** on the top bar.

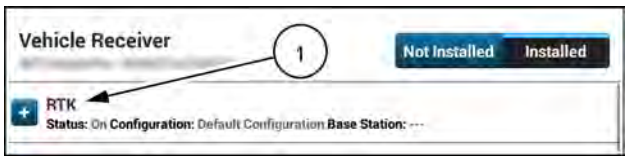


RAIL19PLM0121AA 1

Press the appropriate button to access the “GNSS & Guidance” setup card.

NHPH22PLM0543AA 2

Press the “plus” button **(1)** to access the RTK setup options.



RAPH23PLM0248AA 3

Make sure that the correct radio module is selected as the correction source **(1)**. The AFS VectorPro RTK Radio module, if installed, is automatically recognized based on frequency.

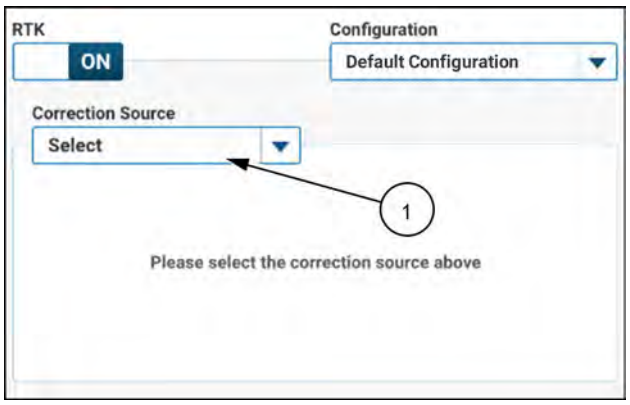
- For the AFS RTK Base Station Pro, you must use the “AFS VectorPro RTK Radio” selection.
- For **Trimble®** base stations, you must use the “AFS VectorPro X-RTK Radio” selection. For more information, see the section titled “ **900 MHz** AFS VectorPro X-RTK Radio setup” that follows this section.

The RTK setup procedure is slightly different based on the “Correction Source” selection. The options are also specific to the frequency of the radio module that is detected.

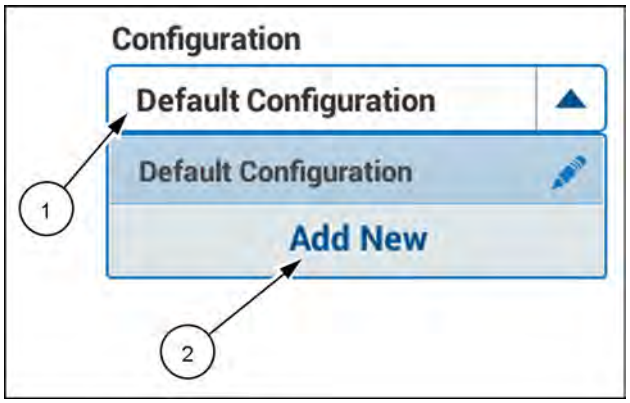
You must first select the configuration that you want to apply the changes to, to avoid applying unintended changes to the currently-selected configuration.

While the default configuration can be edited, CASE IH recommends that you create separate configurations with an easily-identifiable name, such as a name that reflects the location of the base station or the owner of the base station.

Press the ”Configuration” drop-down menu **(1)**, and select your configuration. To define a new configuration, select the “Add New” option **(2)**. Create your new configuration with a name that is appropriate for the particular base station arrangement. Separate configurations also retain the settings to be retained if different receivers are used, or if the receiver is replaced.



NHIL20PLM0784AA 4

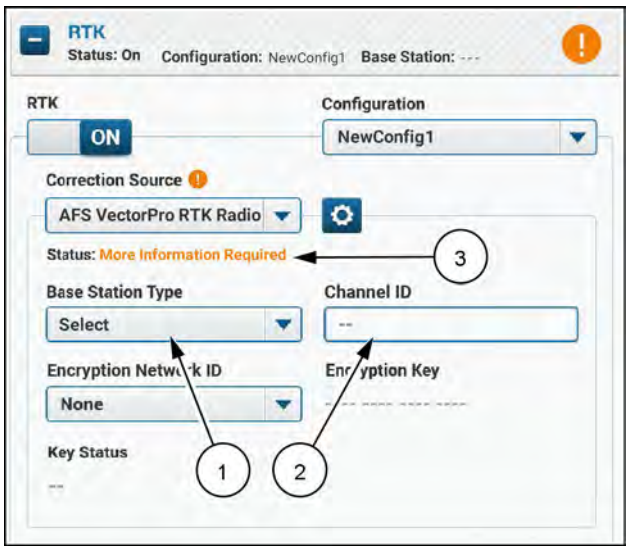


NHIL20PLM0265AA 5

RTK Radio Setup – 900 Mhz AFS VectorPro RTK Radio

Your selection for “Base Station Type” **(1)** will provide most of the required settings for use. The default settings for the are listed below.

Before you can use the **900 MHz** radio, you must select your base station in the ”Base Station Type” drop-down menu **(1)** and your channel ID in the “Channel ID” drop-down menu **(2)**. Otherwise, a status of “More Information Required” **(3)** displays.



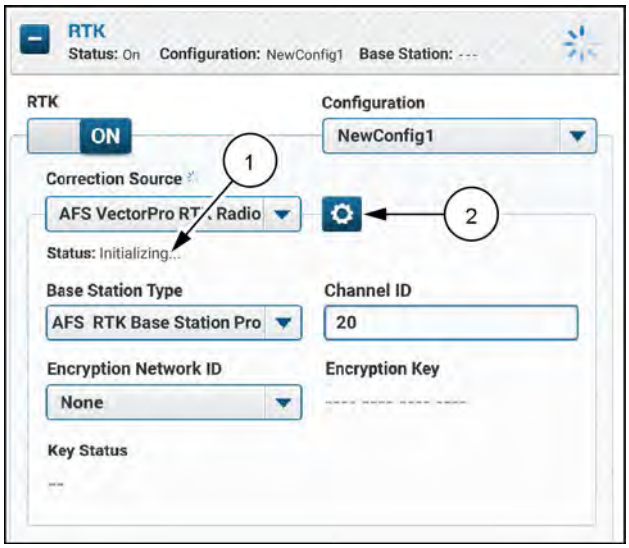
NHIL20PLM0790AA 6

The “AFS RTK Base Station Pro” option must be selected to use your AFS VectorPro RTK Radio module with your CASE IH base station. The GNSS receiver can also communicate with Leica or Generic base station types, depending on if you are using a base station with a Leica or Freewave-compatible radio. For more information, see the heading “Generic base station setup” in this section.

The “Channel ID” value will vary, based on your “Base Station Type” selection.

Base Station Type	Channel ID value
“AFS RTK Base Station Pro”	1 – 3824

After you define the base station type and the channel ID, the status changes to “Initializing” **(1)**.



NHIL19PLM0209BA 7

In general, the advanced setup options are pre-configured for use with your AFS RTK Base Station Pro. The advanced setup options should only be altered to match the base station, if the base station default configuration is changed for compatibility with third-party systems. The default values are listed below. If change is required, press the “advanced setup” button **(2)** to access the advanced setup options.

The values that must be selected to use your AFS Vector-Pro RTK Radio are as follows:

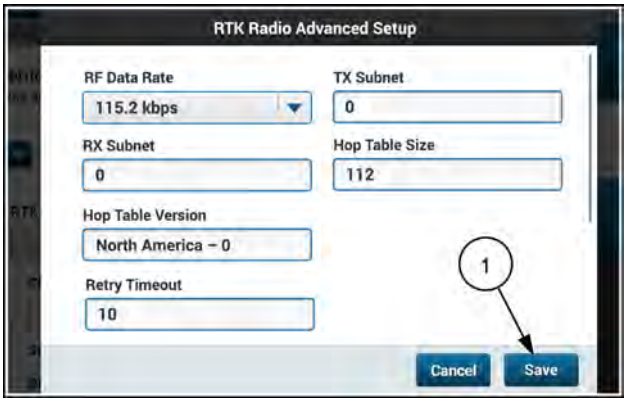
Parameter	Default value	Available values
RF Data Rate	115.2 kbps	115.2 kbps 153.6 kbps
Retry Timeout	10	8 – 254
Rx Subnet	0	0 – 15
Tx Subnet	0	0 – 15
Hop Table Version	0	0 – 6
Hop Table Size	112	75 – 112
Frequency Zone [1]	1111111111111111	N/A

NOTE: *[1] For Brazil, the frequency zone must be set to "1110000011111110".*

The "Hop Table Version" setting differs based on your region.

- 0 – North America/Brazil, **902 – 928 MHz**
- 1 – Australia, **915 – 928 MHz**
- 4 – New Zealand, **921 – 928 MHz**

NOTE: *If the base station is not set to the default settings shown above, then the vehicle will also need to be set to the different settings.*

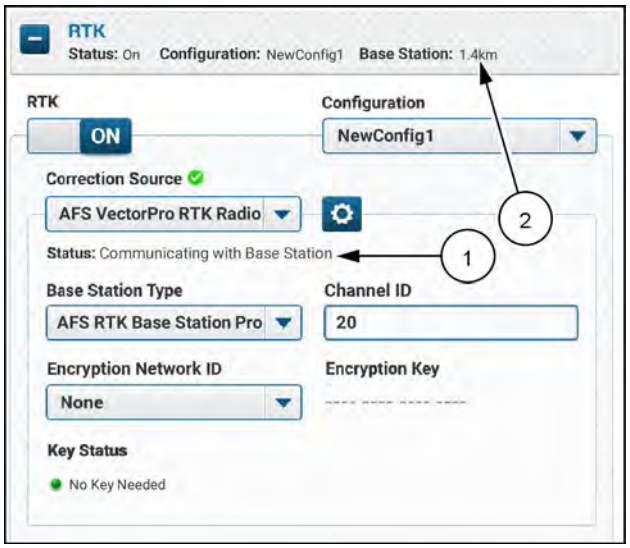


NHIL19PLM0452AA 8

Press the "Save" button **(1)** to save the settings and return to the RTK radio setup screen.

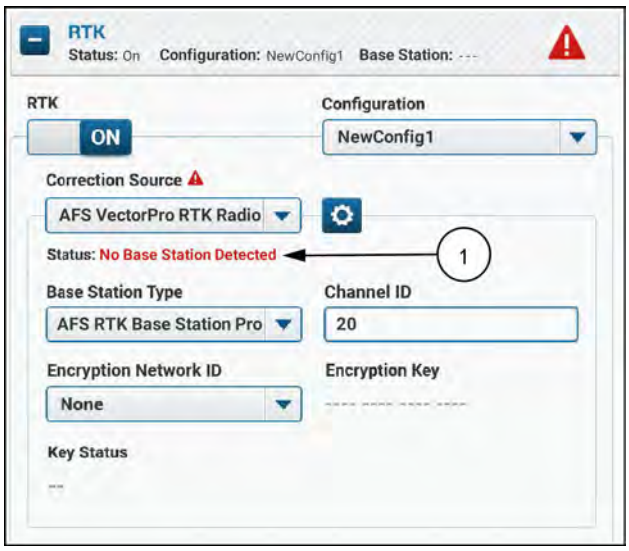
If the base station type is correct, the channel ID is correct, and a base station has been located, the status changes to "Communicating with Base Station" **(1)**.

The base station distance **(2)** is shown.



NHIL19PLM0219BA 9

If any of the RTK settings are incorrect, the status will show “No Base Station Detected” **(1)**. Make sure that you are in range of the base station. Contact your base station administrator to confirm the RTK settings for proper operation.



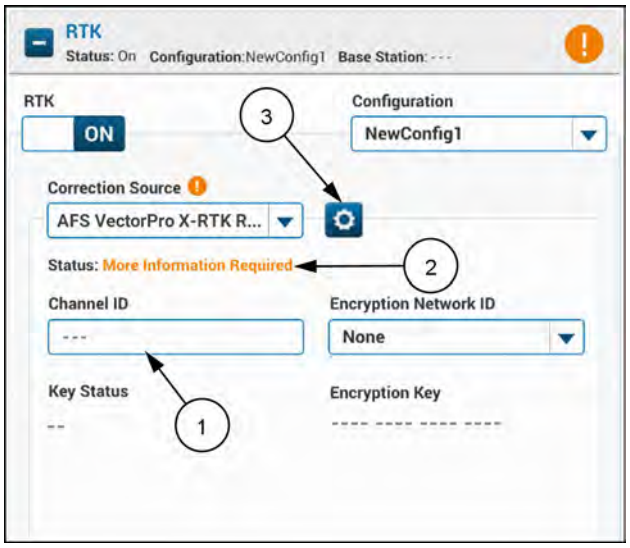
NHIL20PLM0785AA 10

RTK Radio Setup – 900 Mhz AFS VectorPro X-RTK Radio

The AFS VectorPro X-RTK Radio is required for operation with existing **Trimble®** base stations. The AFS VectorPro X-RTK Radio is an external radio receiver that mounts on the top of the vehicle cab with a magnetic mount.

Before you can use the **900 MHz** AFS VectorPro X-RTK Radio radio, you must define your channel ID in the ”Channel ID” drop-down menu **(1)**. Otherwise, a status of “More Information Required” **(2)** displays.

Press the “advanced setup” button **(3)** to access the RTK radio advanced setup options.

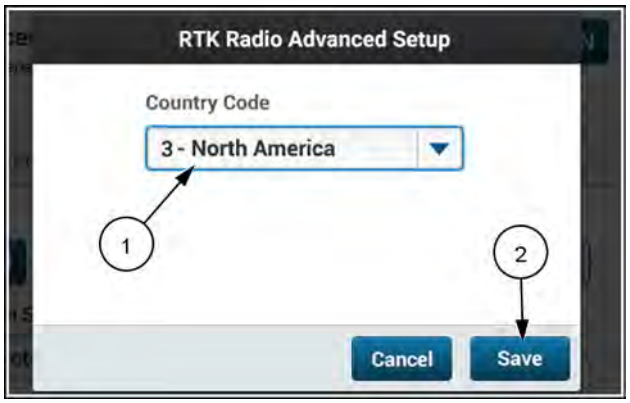


NHIL20PLM0791AA 11

Select the “Country Code” from the drop-down menu **(1)**.

NOTE: *The default value is “3 – North America.”*

Press the “save” button **(2)** to save the settings and return to the RTK radio setup screen.



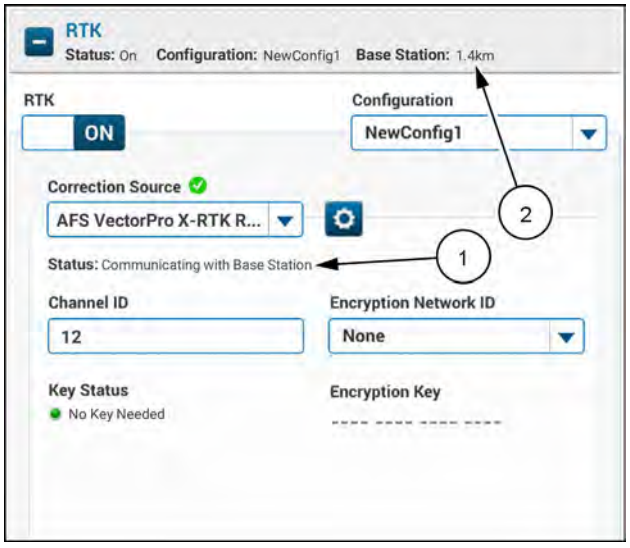
NHIL19PLM0228AA 12

If the channel ID is correct, and a base station has been located, the status changes to “Communicating with Base Station” **(1)**.

The base station distance **(2)** is shown.

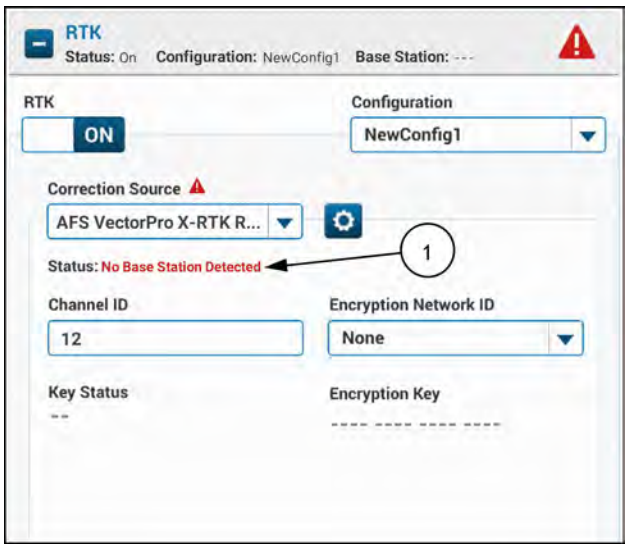
If required, configure the settings for RTK encryption.

NOTE: *For access to encrypted RTK networks, you must use the serial number of the GNSS receiver to generate the key, not the serial number of the X-RTK Radio.*



NHIL19PLM0232BA 13

If any of the RTK settings are incorrect, the status will show “No Base Station Detected” **(1)**. Make sure that you are in range of the base station. Contact your base station administrator to confirm the RTK settings for proper operation.



NHIL20PLM0788AA 14

Leica base station setup

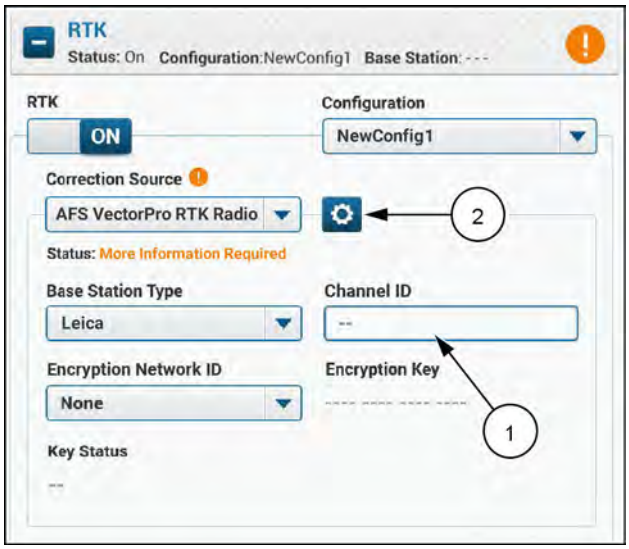
NOTE: *Make a new configuration and enter the changes given here to the new configuration.*

The “Leica” base station selection is used for third-party base stations with a Leica-compatible radio that may need additional settings configured to correctly define the channels.

Define the channel ID **(1)**, and then proceed to setup the advanced setup options.

Base Station Type	Channel ID value
“Leica”	1 – 9

Press the “advanced setup” button **(2)** to access the RTK radio advanced setup options and configure the specific settings for the base station.



NHIL20PLM0794AA 15

The available advanced setup options are as follows:

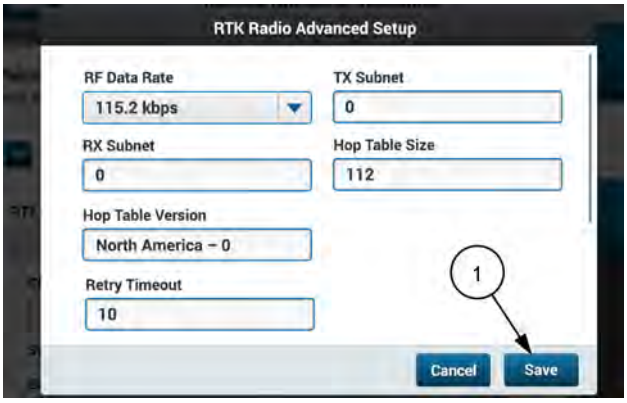
Parameter	Default value	Available values
RF Data Rate	115.2 kbps	115.2 kbps 153.6 kbps
Retry Timeout	10	8 – 254
Rx Subnet	0	0 – 15
Tx Subnet	0	0 – 15
Hop Table Version	0	0 – 6
Hop Table Size	112	75 – 112
Frequency Zone [1]	1111111111111111	N/A

NOTE: *[1] For Brazil, the frequency zone must be set to "1110000011111110".*

The "Hop Table Version" setting differs based on your region.

- 0 – North America/Brazil, **902 – 928 MHz**
- 1 – Australia, **915 – 928 MHz**
- 4 – New Zealand, **921 – 928 MHz**

Press the "Save" button **(1)** to save the settings and return to the RTK radio setup screen.



NHIL19PLM0452AA 16

Generic base station setup

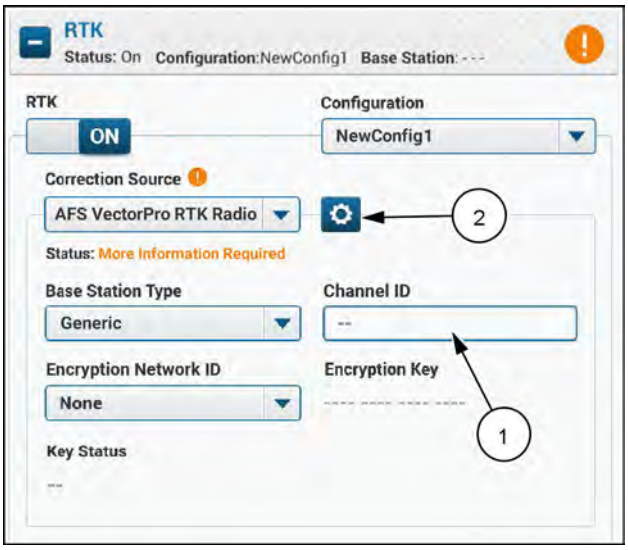
NOTE: *Make a new configuration and enter the changes given here to the new configuration.*

The “Generic” base station selection is used for third-party base stations with a Freewave-compatible radio that may need additional settings configured to correctly define the channels.

Define the channel ID **(1)**, and then proceed to setup the advanced setup options.

Base Station Type	Channel ID value
“Generic”	0 – 4095

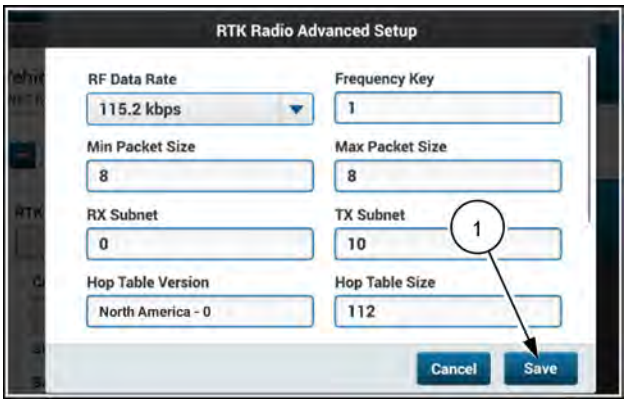
Press the “advanced setup” button **(2)** to access the RTK radio advanced setup options and configure the specific settings for the base station.



NHIL20PLM0795AA 17

The available advanced setup options are as follows:

Parameter	Default value	Available values
Frequency Key	1	0 – 14
Min Packet Size	9	0 – 9
Max Packet Size	8	0 – 9
RF Data Rate	115.2 kbps	115.2 kbps 153.6 kbps
Retry Timeout	10	8 – 254
Rx Subnet	0	0 – 15
Tx Subnet	0	0 – 15
Hop Table Version	0	0 – 6
Hop Table Size	112	75 – 112
Frequency Zone [1]	1111111111111111	N/A



NHIL19PLM0664AA 18

NOTE: *[1] For Brazil, the frequency zone must be set to “1110000011111110”.*

The “Hop Table Version” setting differs based on your region.

- 0 – North America/Brazil, **902 – 928 MHz**
- 1 – Australia, **915 – 928 MHz**
- 4 – New Zealand, **921 – 928 MHz**

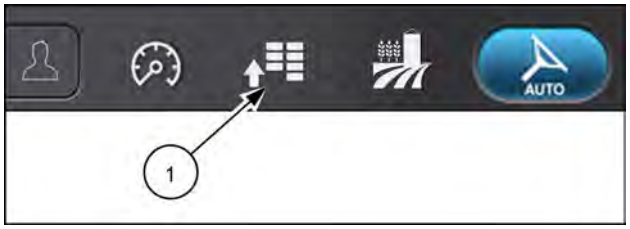
Press the “Save” button **(1)** to save the settings and return to the RTK radio setup screen.

Real-Time Kinematic (RTK) corrections setup - 450 Mhz radios

NOTE: *Make sure that the appropriate Real-Time Kinematic (RTK) radio module is installed, and that the display contains the proper activations for RTK corrections.*

NOTE: *When you change RTK configurations, the configurations that were in the system are removed and cannot be recovered. This includes the default configurations present in a new software installation.*

Press the menu button **(1)** on the top bar.

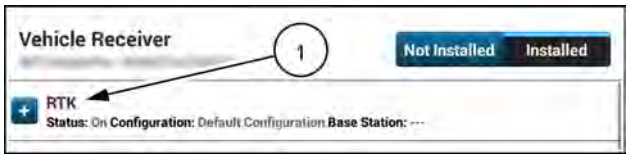


RAIL19PLM0121AA 1

Press the appropriate button to access the “GNSS & Guidance” setup card.

NHPH22PLM0543AA 2

Press the “plus” button **(1)** to access the RTK setup options.



RAPH23PLM0248AA 3

Make sure that the correct correction source is selected:

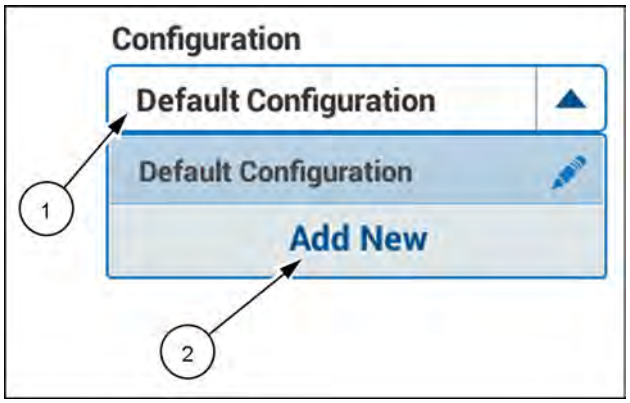
- For the AFS RTK Base Station Pro, you must use the “AFS VectorPro RTK Radio” selection.
- For **Trimble®** base stations, you must use the “AFS VectorPro X-RTK Radio” selection.

The RTK setup procedure is the same for either radio, however the options are specific to the frequency of the radio module that is detected.

You must first select the configuration that you want to apply the changes to, to avoid applying unintended changes to the currently-selected configuration.

While the “Default” configuration can be edited, CASE IH recommends that you create separate configurations with an easily-identifiable name, such as a name that reflects the location of the base station or the owner of the base station.

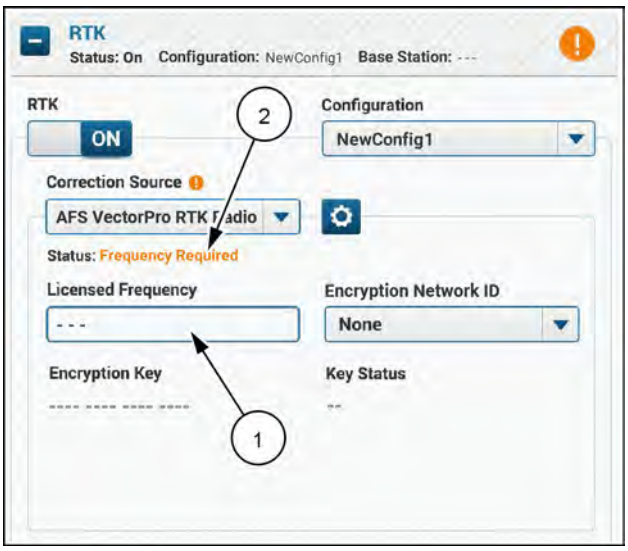
Press the ”Configuration” drop-down menu **(1)**, and select your configuration. To define a new configuration, select the “Add New” option **(2)**. Create your new configuration with a name that is appropriate for the particular base station arrangement. Separate configurations also retain the settings to be retained if different receivers are used, or if the receiver is replaced.



NHIL20PLM0265AA 4

The display will show the current status, along with the following information:

- Licensed Frequency
- Encryption Network ID
- Key Status
- Encryption Key



NHIL20PLM0804AA 5

Before you can use the **450 MHz** radio, you must define a valid licensed frequency **(1)**. If you do not define the licensed frequency, the status will show “Frequency Required” **(2)**.

NOTE: *The frequency range is **403 – 473 MHz**. The licensed frequency must be divisible by **12500 Hz**.*

If the base station is encrypted, then you must input the proper RTK encryption network ID and encryption key. For more information, see “Real-Time Kinematic (RTK) encryption setup” (**4-22**).

NOTE: *Depending on the base station, an RTK encryption key may not be needed.*

Press the “advanced setup” button to access the RTK radio advanced setup options and confirm that the values are correct for your base station.

Confirm that the values are correct for your base station.

The following parameters are available for the AFS VectorPro RTK Radio module for use with the AFS RTK Base Station Pro and other base stations that support available radio settings:

- “Mode” **(1)**
- “Trimtalk Basestation Type” **(2)**

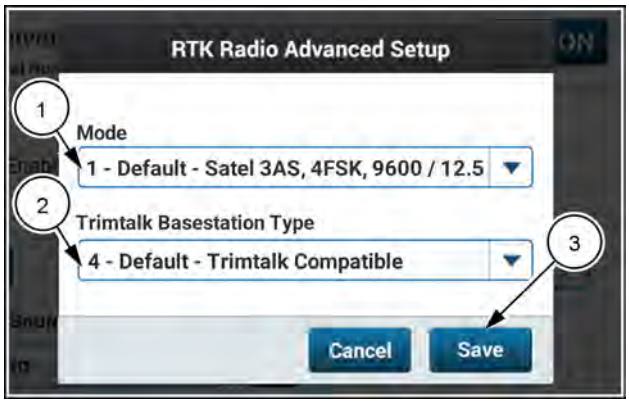
The following parameters are available for the AFS VectorPro X-RTK Radio module for use with **Trimble®** base stations:

- Mode **(1)**

NOTE: *If the base station is not set to the default settings, shown, then the vehicle will also need to be set to the different settings.*

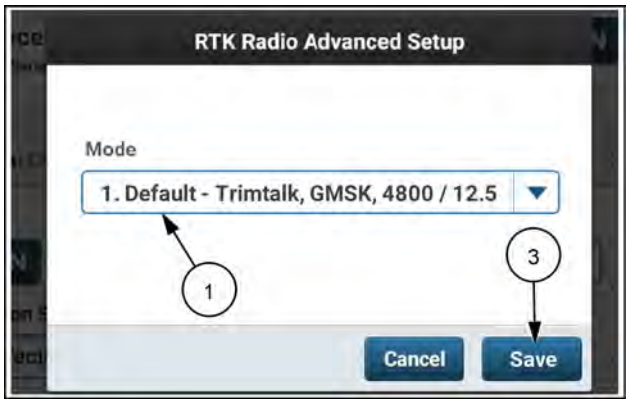
Press the “save” button **(3)** to save the settings and return to the RTK radio setup screen.

AFS VectorPro RTK Radio



NHIL19PLM0667AA 6

AFS VectorPro X-RTK Radio



NHIL19PLM0223AA 7

Available selections for the AFS VectorPro RTK Radio module:

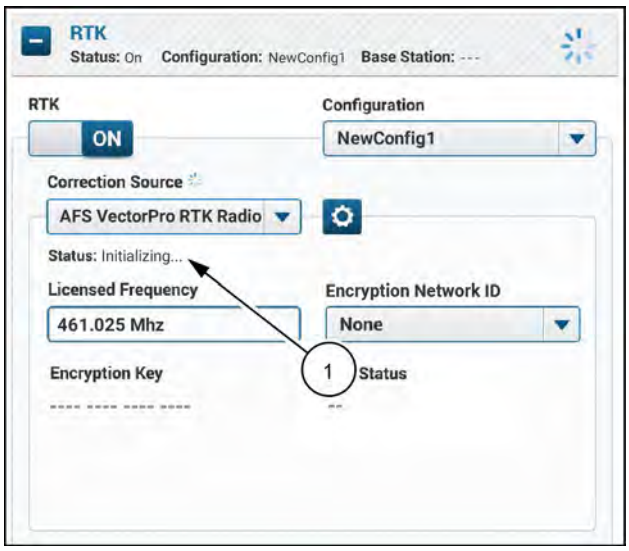
Selection	Description (Protocol, Modulation, Link Rate (bps) / Channel Spacing (kHz), FEC)
“Mode”	1 - Default - Satel 3AS, 4FSK, 9600 / 12.5, FEC on
	2 - Trimtalk compatible, GMSK, 4800 / 12.5
	3 - Pacific Crest compatible, GMSK, 4800 / 12.5, FEC on
	4 - Pacific Crest compatible, 4FSK, 9600 / 12.5, FEC on
	5 - Pacific Crest FST compatible, 4FSK, 9600 / 12.5, FEC on
	6 - Satel 3AS, 4FSK, 9600 / 12.5, FEC off
	7 - Satel 3AS, 4FSK, 19200 / 25.0, FEC on
	8- Satel 3AS, 4FSK, 19200 / 25.0, FEC off
	9 - Trimtalk compatible, GMSK, 9600 / 25.0
	10 - Pacific Crest compatible, GMSK, 9600 / 25.0, FEC on
	11 - Pacific Crest compatible, 4FSK, 19200 / 25.0, FEC on
	12 - Pacific Crest FST compatible, 4FSK, 19200 / 25.0, FEC on
“Trimtalk Basestation Type”	4 - Default - Trimtalk Compatible
	0 - PacCrest Compatible

Available selections for the X-RTK Radio module:

Selection	Description (Protocol, Modulation, Link Rate (bps) / Channel Spacing (kHz), FEC)
“Mode”	Default - Trimtalk, GMSK, 4800 / 12.5
	Trimtalk, GMSK, 8000 / 12.5
	Trimtalk, GMSK, 9600 / 25.0

After you define the licensed frequency, the status will change to “Initializing” **(1)**.

NOTE: *The system can take up to* ***30 s*** *to detect a base station.*

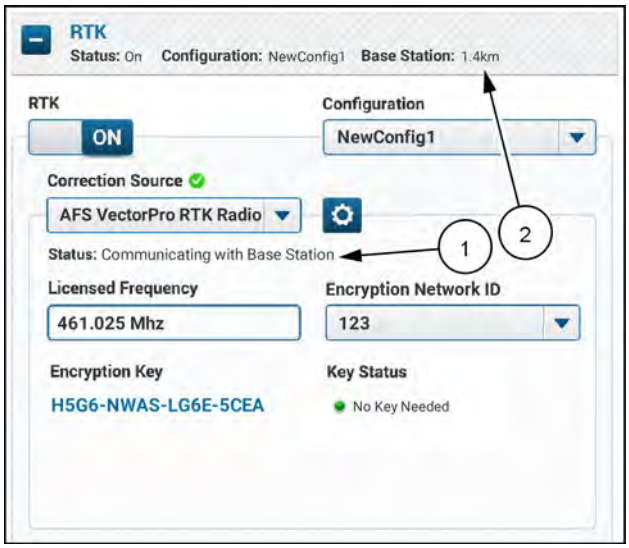


NHIL19PLM0207BA 8

If the licensed frequency is valid, the advanced RTK settings are correct, and a base station has been located, the status changes to “Communicating with Base Station” **(1)**.

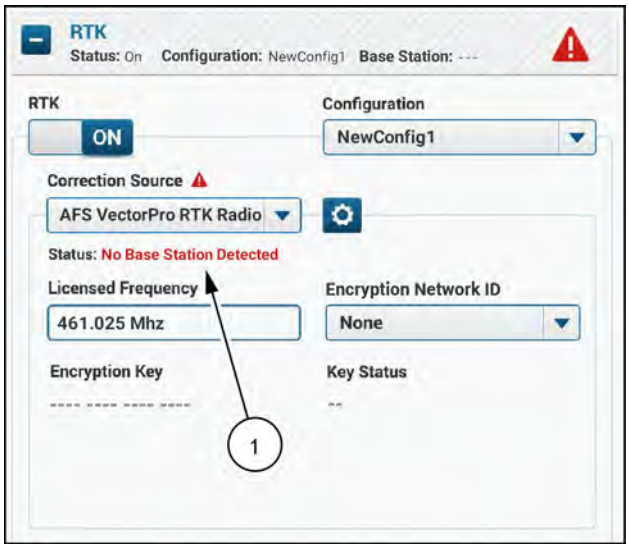
The base station distance **(2)** is shown.

NOTE: *It may take up to 30 seconds for the base station to be detected, depending on the reception and base station settings.*



NHIL19PLM0220BA 9

If any of the RTK settings are incorrect, the status will show “No Base Station Detected” **(1)**. Make sure that you are in range of the base station. Contact your base station administrator to confirm the RTK settings for proper operation.



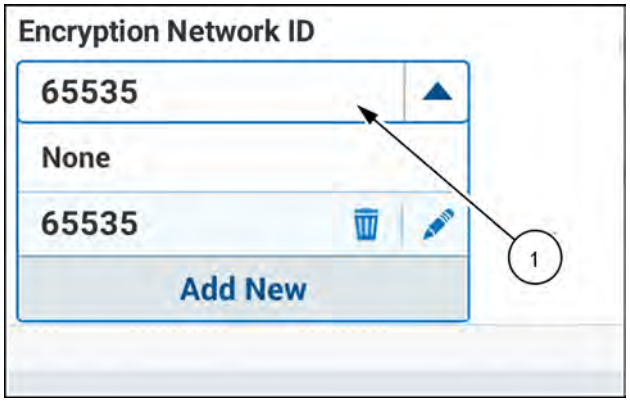
NHIL20PLM0805AA 10

Real-Time Kinematic (RTK) encryption setup

The Real-Time Kinematic (RTK) encryption feature gives the owner or manager of the base station complete control on who can access the RTK correction signal when operating with the AFS VectorPro RTK or AFS VectorPro X-RTK radio. Each unique RTK encryption key is tied to the GNSS receiver on the vehicle, regardless of the radio module used.

To setup the encryption key, press the "Encryption Network ID" drop-down menu **(1)**.

Icon	Function
	Edit encryption key
	Delete encryption key
“Add New”	Create encryption key



NHIL19PLM0215AA 1

You can store up to ten encryption keys for each type of radio in the display. Upon enabling your RTK radio correction, the correct key will automatically be selected from the list when the vehicle searches for the corresponding base station.

To add a new encryption key:

1. Add the 16-digit encryption key **(1)**.
2. Add the encryption network ID **(2)**.
3. Press the “Save” button **(3)**.

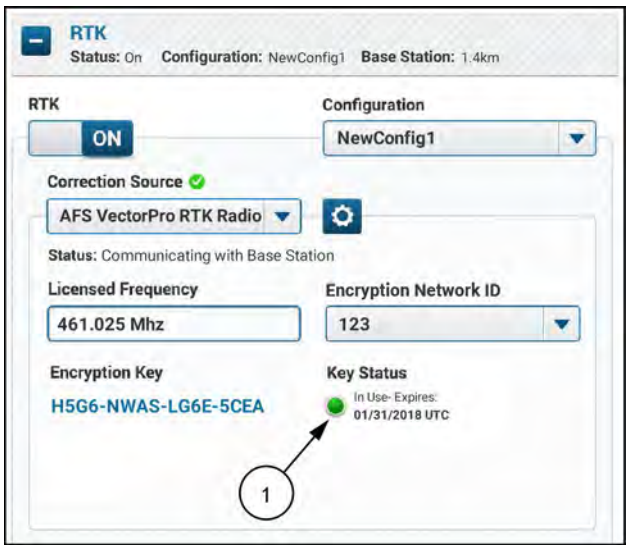
NOTE: *The encryption key and the encryption network ID must be provided by your RTK network administrator for AFS VectorPro RTK radios. For the AFS VectorPro X-RTK radio, enter any descriptive ID for the network.*

NHIL19PLM0214AA 2

After the base station information and correction source is received, the display will show the current encryption key status **(1)**:

- Good – Key is valid and in use.
- Expired – RTK corrections will not be transmitted because the encryption key is expired. Contact your RTK network administrator for an updated RTK Encryption Key.
- Expires soon – RTK encryption key will expire soon; contact your RTK network administrator for an updated encryption key so there will be not loss of RTK service.
- Key needed – No key has been entered in for the selected RTK Network, and a key is needed in order to receive RTK corrections. Contact your RTK network administrator for an RTK Encryption Key.
- No key needed – RTK Network is not encrypted, so there is no need to enter an encryption key to receive RTK corrections.

NOTE: *The **450 MHz** radio screen layout is shown.*



NHIL19PLM0216BA 3

Real-Time Kinematic (RTK) corrections setup - Networked Transport of RTCM via Internet Protocol (NTRIP)

Select “NTRIP” from the “Correction Source” drop-down menu **(1)**.

Select a previously-configured configuration from the drop-down menu **(2)**, or create a new configuration at this time.

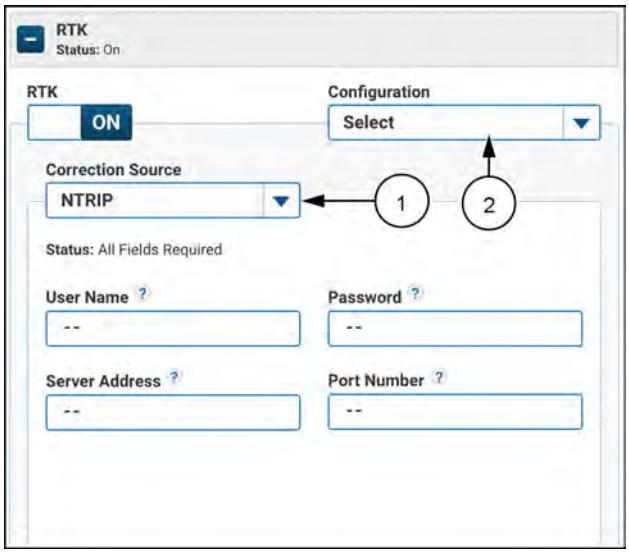
NOTE: *If you intend to change any of the settings while an existing configuration is selected, first create a new configuration to avoid applying unintended changes to the existing configuration.*

When you select a defined configuration, the display retrieves information from the receiver and the Processing and Connectivity Module (PCM). If NTRIP corrections exist and the RTK configuration was previously configured, then the system attempts to log in to the NTRIP caster.

Upon creation of a new configuration, you must define the following information:

- User Name – Enter the username from your NTRIP service administrator
- Password – Enter the password from your NTRIP service administrator
- Server Address – Enter the server name from your NTRIP service administrator, either a URL or an IP Address
- Port Number – Enter the port number recommended by your NTRIP service administrator

This information is typically provided via e-mail by your authorized correction services dealer upon subscription activation.



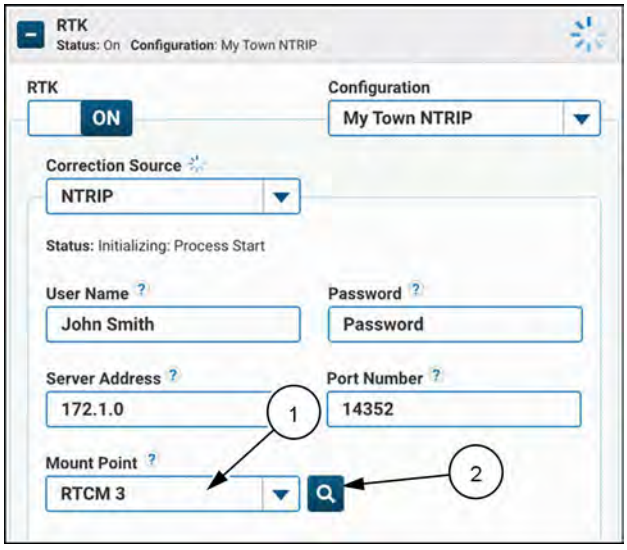
NHIL20PLM0771AA 1

The mount point selection is retrieved from the server, so you must first enter your user name, password, server name, and port number before you can select a mount point.

Upon successful connection to the network, the “Mount Point” drop-down menu **(1)** will populate with the available mount points.

Select the mount point with a compatible correction as recommended by your NTRIP service administrator and this manual. If available, CASE IH recommends using the latest available RTCM mount point. If necessary, press the “search” icon **(2)** to search for your mount point by typing the name into the pop-up keyboard.

When all of the fields are defined, the system will attempt to log in to the NTRIP server.



NHPH24PLM0440AA 2

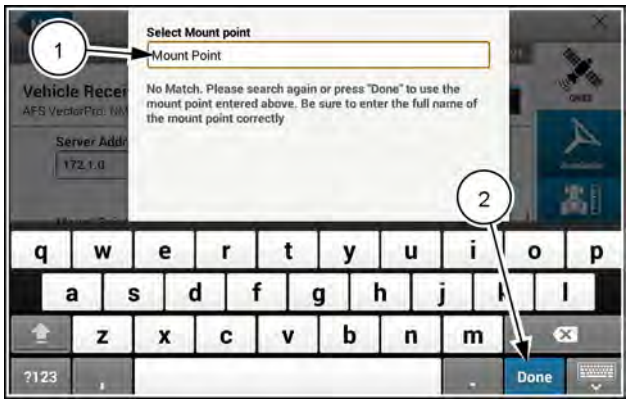
If the mount points do not populate, your cellular link may be poor; it may be necessary to move the vehicle to a location with better cellular reception. However, in the case of unique or very localized NTRIP solutions, the mount point provided to you may be not be shown on the list. It is possible to manually add a mount point to the drop-down menu.

Press the “search” icon **(1)**.

NHPH24PLM0440AA 3

Use the pop-up keyboard to type your mount point into the window **(1)**.

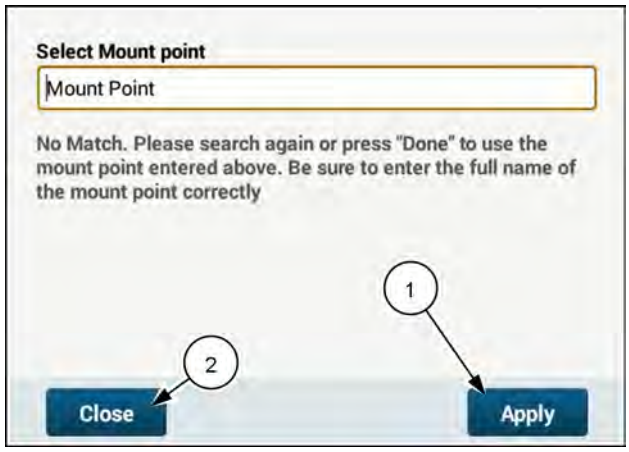
Press the “Done” icon **(2)** to close the keyboard after you have entered the mount point name.



NHPH24PLM0443AA 4

Press the “Apply” button **(1)** to confirm your mount point.

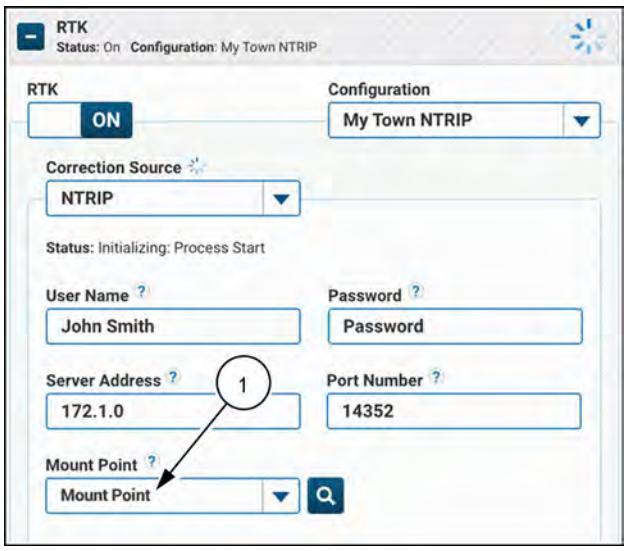
If you do not wish to use the mount point entered, press the “Close” button **(2)** to return to the previous screen.



NHPH24PLM0445AA 5

The mount point now displays **(1)** on the drop-down menu.

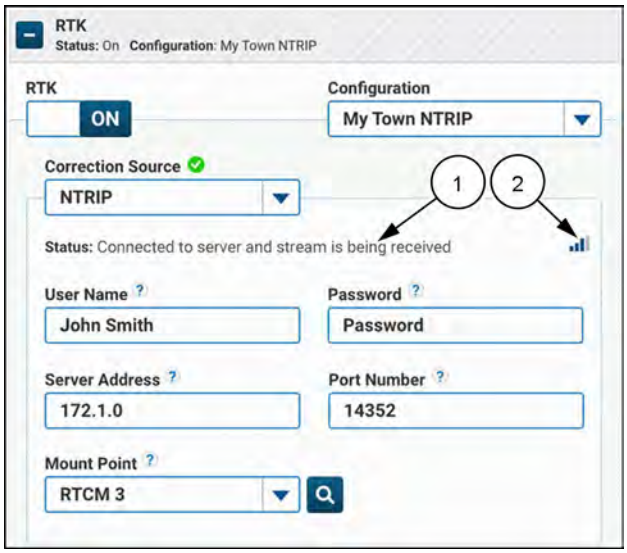
The new mount point will remain on the list until you choose a different, standard, mount point from the list.



NHPH24PLM0444AA 6

If the NTRIP settings are correct and a network has been found, the status **(1)** changes to “Connected to server and stream is being received.”

The cellular signal strength **(2)** is shown.



NHPH24PLM0441AA 7

If the connection with the NTRIP caster is not successful, an error message may appear. The NTRIP status messages are listed below.

NTRIP Status
All Fields Required – All the fields have to be correctly filled in for correction streaming to start. Contact NTRIP service administrator or dealer for subscription.
Initializing communication to server – Attempting to connect to server selected to obtain mount point list.
Logging into server – If condition persists, contact NTRIP service administrator or dealer.
Connected to server and stream is being received – If RTK correction age is not low, check that the mount point is correct and correction type is supported.
Error - Incorrect Mount Point entered – Re-select mount point with compatible correction as recommended by NTRIP service adminstrator and operator’s manual. An RTCM correction is preferred, when available.
Error - Login or Password not accepted by server – Re-check username and password from NTRIP service administrator or dealer.
Server Error - IP Address/URL or Port number may be incorrect – Re-check server name and port number from NTRIP service administrator or dealer.
Error - No active NTRIP subscription assigned – Contact NTRIP service administrator or dealer.
Session Lost - Stream interrupted, attempting to reconnect – Cellular service may be poor. If possible, move to area with better reception.
Initializing - Requesting Mount Point List – Communication with server must be established before mount point can be selected from list and setup completed.

NTRIP Status
⚠ No Cellular Network Detected – Corrections cannot be received without cellular reception.

Real-Time Kinematic (RTK) corrections setup - RTK external device

NOTE: *Modem setup is the responsibility of the modem distributor.*

To begin configuring corrections for an external device, select “RTK External Device” from the “Correction Source” drop-down menu **(1)**. External devices for correction are devices that communicate over a serial interface, such as external modems, external radios, PCs, or a device with a wireless connection.

Select a previously-configured configuration from the drop-down menu **(2)**, or create a new configuration at this time.

NOTE: *If you intend to change any of the settings while an existing configuration is selected, first create a new configuration to avoid applying unintended changes to the existing configuration.*

The default value for the “Port Setting” option **(3)** is “None.” If the port setting is not defined, then the status “Port Setting Required” **(4)** is shown.

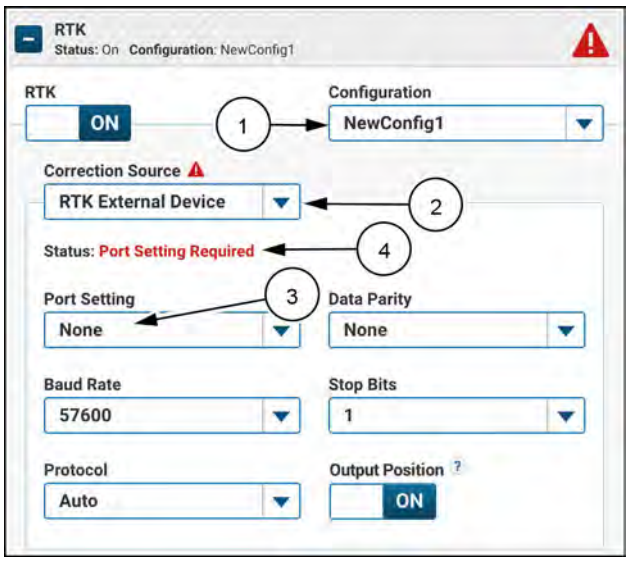
Before setup, you must configure which receiver port will be used for communication by the external device.

Description	Pins	Port / Connector
None	-	-
Receiver Serial Port #1	1, 5, 12	B
Receiver Serial Port #2	2, 3, 5	B

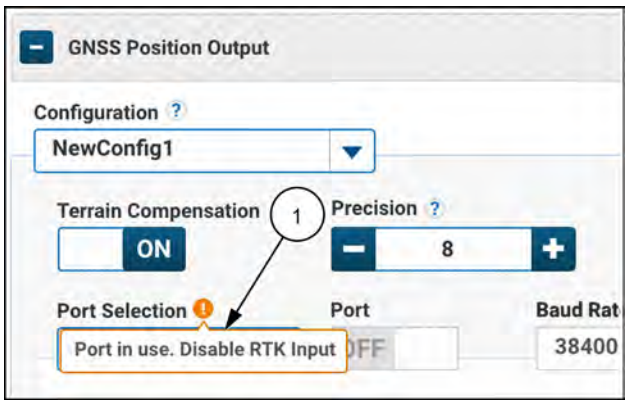
NOTE: *The correct baud rate depends on the device with which the receiver will interface. Contact the vendor of the device for information about compatibility and required configuration.*

NOTE: *The external RTK feature will override any GNSS position output that might be setup for the selected port. If an external device is no longer being used, make sure that you select the correct RTK configuration, or turn off the RTK correction if corrections are no longer available.*

If you attempt to configure GNSS position output on the port that is already configured for an RTK external device, the warning **(1)** appears.



NHIL22PLM0468BA 1

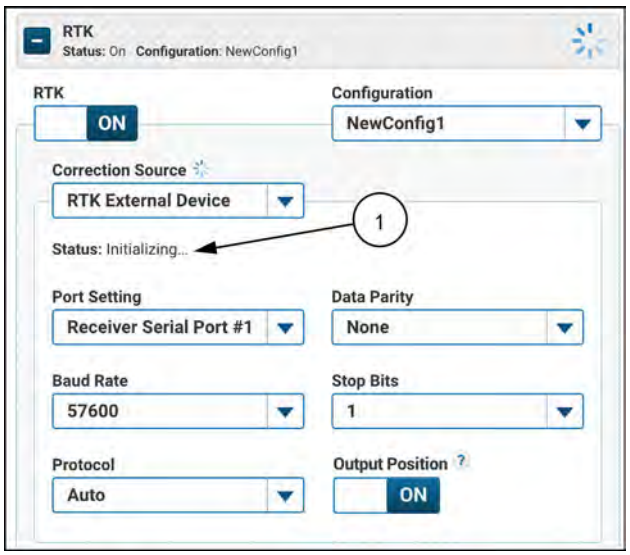


NHIL20PLM0355BA 2

Upon selecting a port, the display will automatically retrieve the appropriate information from the receiver. The status “Initializing” **(1)** is shown.

If an RTK external device was previously configured, then the system will automatically apply the correction settings.

If any device setting is incorrect, the status shows “No Base Station Detected.”



NHIL22PLM0467BA 3

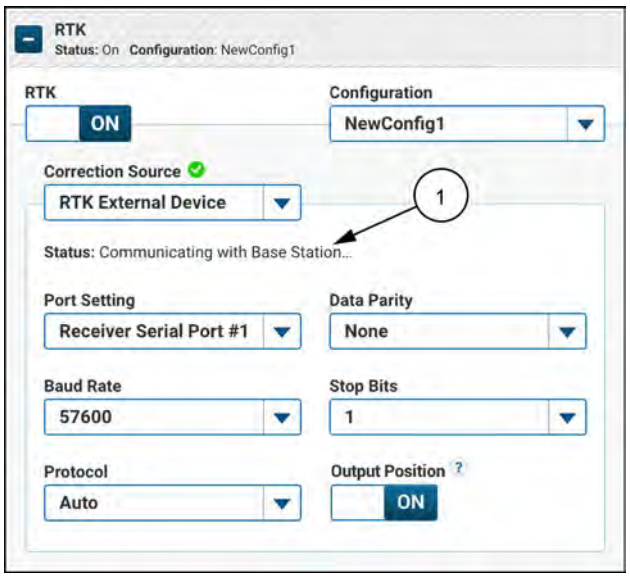
Select the parity bit for the communication port to which the external device is connected to. This setting has a default value of “None”.

Select the number of stop bits for the communication port to which the external device is connected to. This setting has a default value of “1”.

Select the protocol for the communication port to which the external device is connected. Various supported protocols include CMR, RTCM 2.2, RTCM 2.3, and RTCM 3.

NOTE: *When the “Auto” option is selected for the “Protocol” status, the RTK Correction type will automatically be recognized. The “Protocol” dropdown list enables you to manually select which protocol option you prefer.*

The display provides the current status of the external device connection **(1)**.



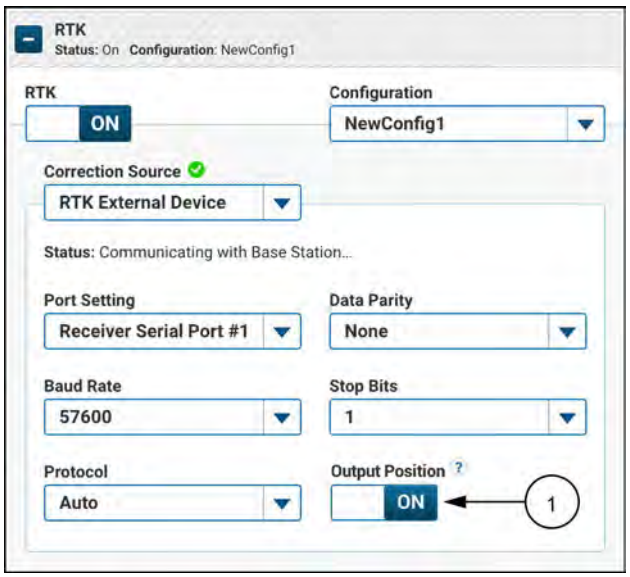
NHIL22PLM0466BA 4

Output current GNSS position

Press the “Output Position” switch **(1)** to enable or disable position output to the external device via the selected serial port according to the **NMEA 0183®** standard.

NOTE: *Your NTRIP provider may require position output from the receiver in order to receive RTK corrections from their network.*

The “Output Position” switch is set to “ON” by default.



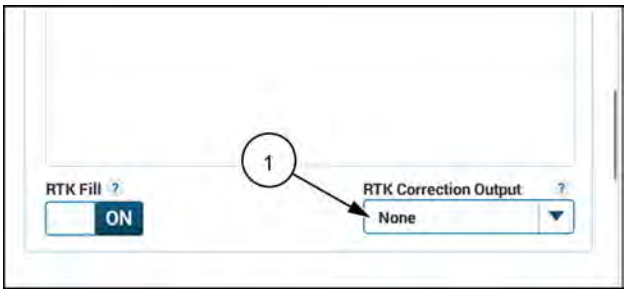
NHIL22PLM0466BA 5

Real-Time Kinematic (RTK) correction output

The Processing and Connectivity Module (PCM) can output Real-Time Kinematic (RTK) corrections to secondary receivers on the implement, if equipped.

At the time of publish, only corrections transmitted over Networked Transport of RTCM via Internet Protocol (NTRIP) or from the X-RTK Radio are supported.

After configuring NTRIP or X-RTK Radio corrections, press the “RTK Correction Output” drop-down menu **(1)** at the bottom of the expanded setup menu.



NHIL23PLM0154AA 1

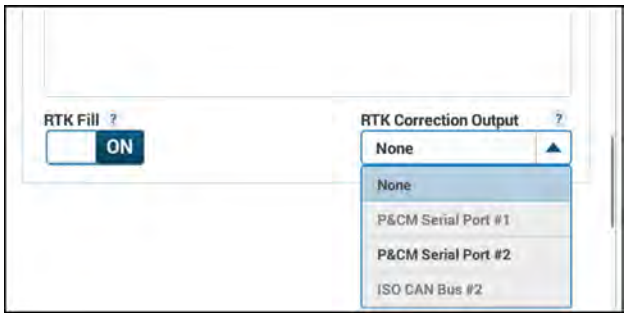
Select the desired port to output RTK corrections:

- P&CM Serial Port #1
- P&CM Serial Port #2
- ISO CAN Bus #2

NOTE: *If the CAN bus is used to output RTK corrections, the bus traffic will increase and performance may be reduced.*

NOTE: *The port selection will be gray and non-selectable if the port is already configured for GNSS position output.*

NOTE: *When you output the RTK correction on a serial port, the port settings are fixed:* ***19200 Bd****, no parity, one stop bit.*



NHIL23PLM0155AA 2

AFS corrections setup

The subscription-based AFS correction sources use Precise Point Positioning (PPP) technology to allow for a greater accuracy over SBAS (WAAS, EGNOS, etc.) corrections.

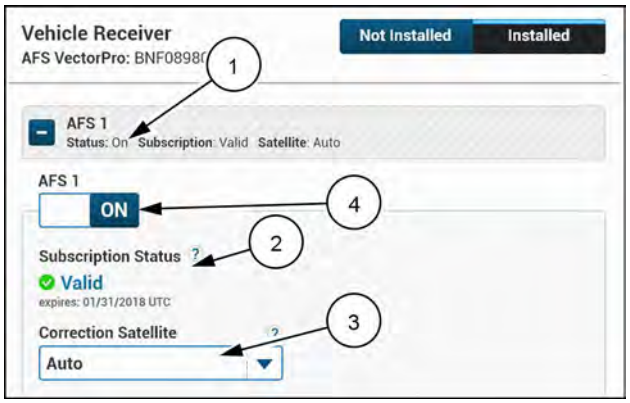
The AFS 1, AFS 2, and AFS 3 subscription can be activated in your display directly from the satellite. After you purchase the subscription, the receiver must sit, powered on, in an open area to receive the correction satellite signals for up to 30 minutes until the subscription is downloaded. Once the expiration date is updated in the display, the correction service is ready to use. If this is not done within 30 days, see your CASE IH dealer to have the subscription re-broadcast from the satellite.

The information shown for the AFS correction menu is as follows:

- Status **(1)** – ON or OFF, viewable when the correction source is collapsed.
- “Subscription Status” **(2)**
- “Correction Satellite System” **(3)** – Default: Auto

Press the button **(4)** to enable the correction.

NOTE: *If there is no subscription, then you cannot enable the correction.*



RAPH22PLM0143AA 1

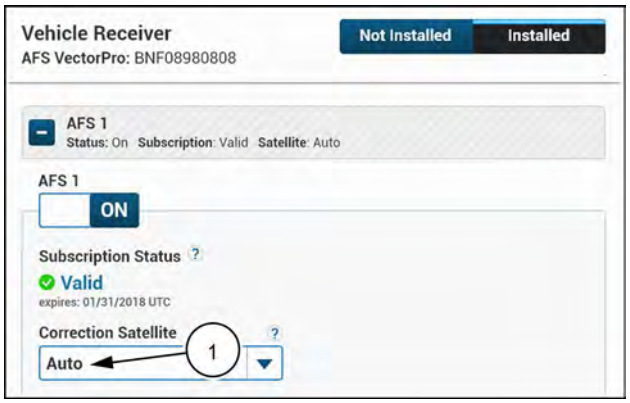
The following subscription status messages are available:

Status	Description
None	No Subscription
	Valid – The subscription is valid.
	Expiring Soon – The subscription expires in less than two weeks.
	Expired – The subscription is expired.

If the subscription expires, the correction is not automatically turned off.

In “Auto” (automatic) mode **(1)** , the system will track up to three satellites so that corrections will always be available, with no jumps in position if communication is lost with any one satellite.

The “Correction Satellite” selection applies to AFS 1, AFS 2, and AFS 3 corrections, as well as the RTK fill feature.



RAPH22PLM0143AA 2

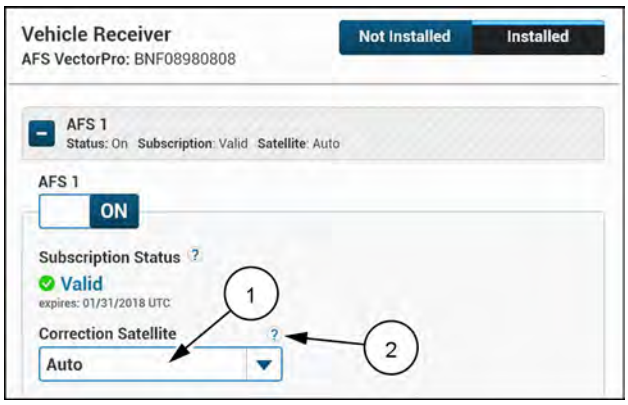
Manual satellite entry

There are occasional conditions that force your correction service to change the broadcast frequency. These changes may be due to satellite failures or changes forced upon them by satellite providers. There are several mechanisms to make these changes automatic so you do not need to take action. However there are occasional requirements for a manual entry.

NOTE: *Do not perform a manual entry of correction satellite data unless instructed to do so by your CASE IH dealer.*

In the “Vehicle Receiver” section open the “Correction Satellite” menu **(1)**.

You can also press the help icon **(2)**.



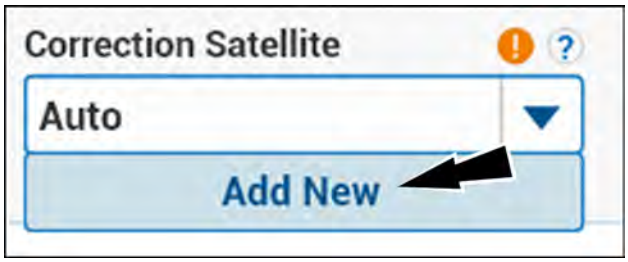
RAPH22PLM0143AA 3

If you pressed the help icon, a message appears.

The message **(1)** reads, “Auto is recommended, unless otherwise instructed by your dealer. Updates to satellite frequency information are usually automatic, when in open sky conditions. See Skyplot to view currently tracked correction satellites.”

RAPH22PLM0144AA 4

Press the “Add New” menu item.



RAPH22PLM0146AA 5

A “New Satellite” popup window appears. The popup window states, “Warning. Only enter new satellite information if instructed by your dealer.”

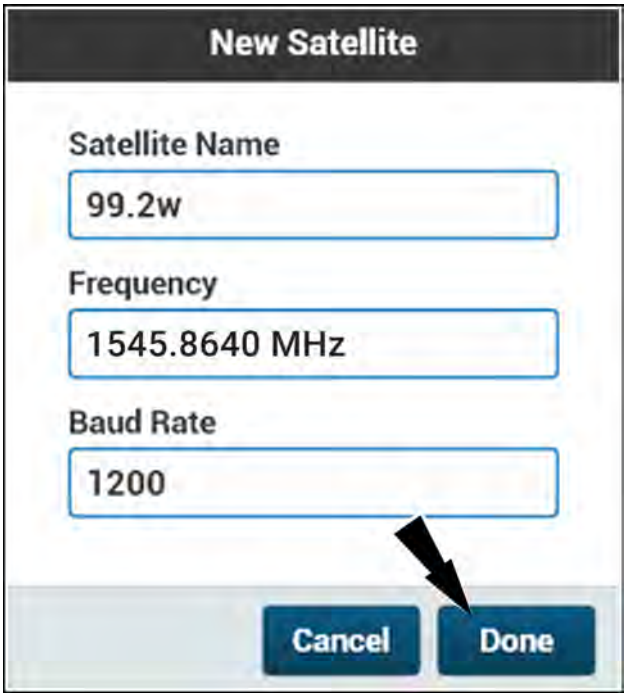
Press the “Proceed” button.

RAPH22PLM0148AA 6

Enter the satellite information that was provided by your CASE IH dealer.

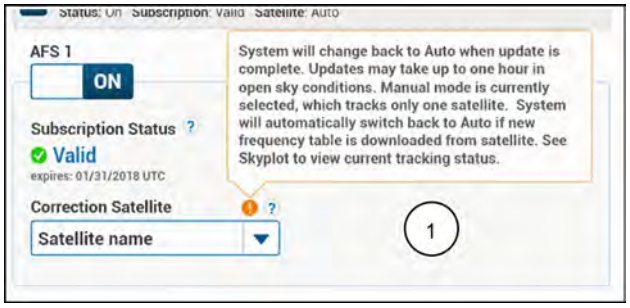
Press the “Done” button.

NOTE: *The system checks for available satellites. If the system has received updated information from the satellites, the system automatically reverts to “Auto” mode. You do not need to perform any actions. If the system has still not received updated satellite information automatically, the system will retain your manual entries.*



RAPH22PLM0909BA 7

If you have manually entered a satellite, a warning icon appears. To see information about the warning, press the warning icon. The message **(1)** reads, “System will change back to Auto when update is complete. Updates may take up to one hour in open sky conditions. Manual mode is currently selected, which tracks only one satellite. System will automatically switch back to Auto if new frequency table is downloaded from a satellite. See Skyplot to view current tracking status.”



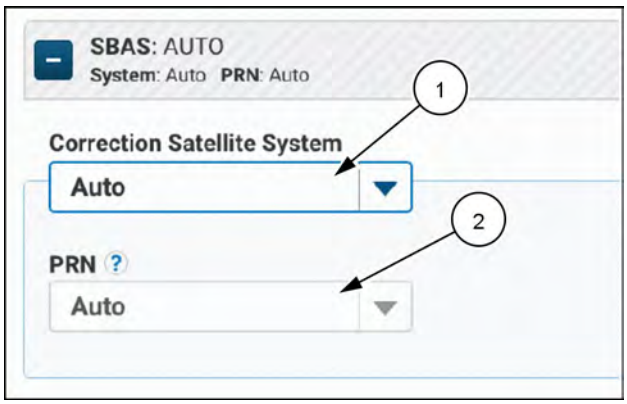
RAPH22PLM0145AA 8

Satellite-Based Augmentation System (SBAS) corrections setup

The Satellite-Based Augmentation System (SBAS) increases the accuracy, reliability, availability of the navigation system by utilizing ground station correction messages sent to Global Navigation Satellite System (GNSS) satellites.

The information shown for the SBAS menu is as follows:

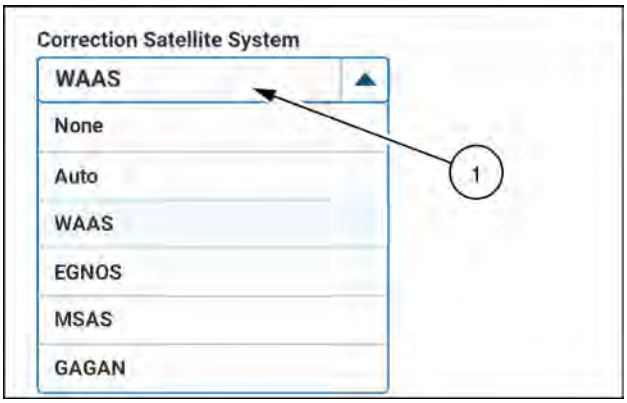
- “Correction Satellite System” **(1)** – Default: Auto
- “PRN” **(2)** – Default: Auto



NHIL20PLM0026AA 1

There are several correction satellite systems that use SBAS technology with specific coverage areas, such as:

- Wide Area Augmentation System (WAAS), United States
- European Geostationary Navigation Overlay System (EGNOS), Europe
- Multifunctional Transport Satellites (MTSAT) Satellite Augmentation System (MSAS), Japan
- GPS-aided GEO augmented navigation (GAGAN), India
- Quasi-Zenith Satellite System (QZSS), Japan

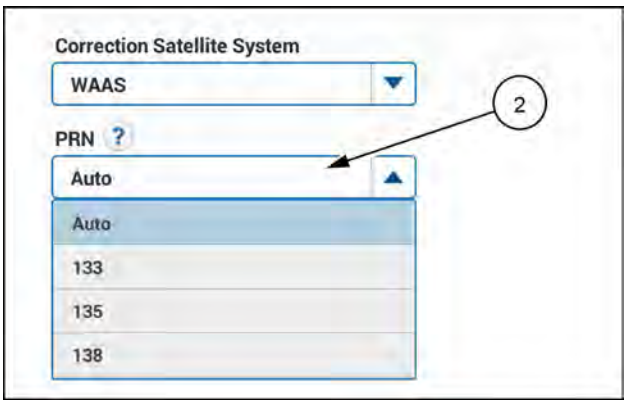


NHIL20PLM0797AA 2

Keep the “Correction Satellite System” option **(1)** set to “Auto” unless instructed by your dealer.

Each satellite in the correction satellite system has a unique identifier called a Pseudo Random Noise (PRN) code. The default “PRN” option **(2)** of "Auto" will automatically select the satellite that results in the best performance. Keep the “PRN” option set to "Auto" unless instructed by your dealer, such as when it is a common occurrence for the wrong satellite to be automatically selected.

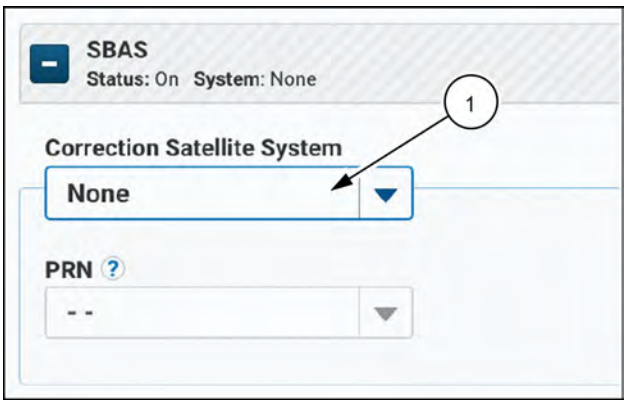
NOTE: *The “PRN” selection is not selectable when the “Correction Satellite System” is set to Auto.*



NHIL20PLM0029AA 3

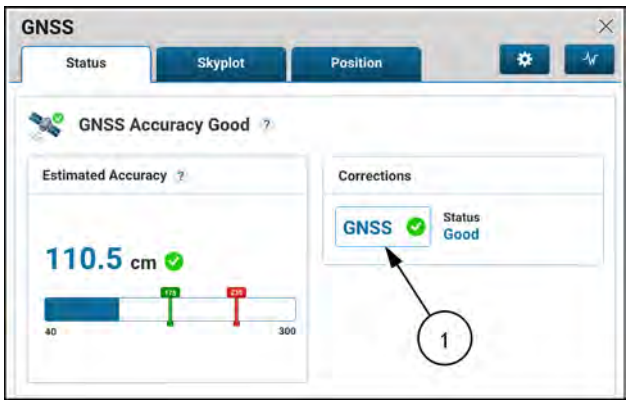
If you wish to disable the use of a detected SBAS system in your region, select ”None” **(1)**.

NOTE: *It is not strictly necessary to select “None” if there is not a detected SBAS system in your operating region. If the selection is set to “Auto”, then the SBAS system will not be used if the satellite correction system does not cover your operating region.*



NHIL20PLM0027AA 4

If you select “None” as the correction satellite system, the correction type on the “GNSS Status” screen will be shown as “GNSS” **(1)**.



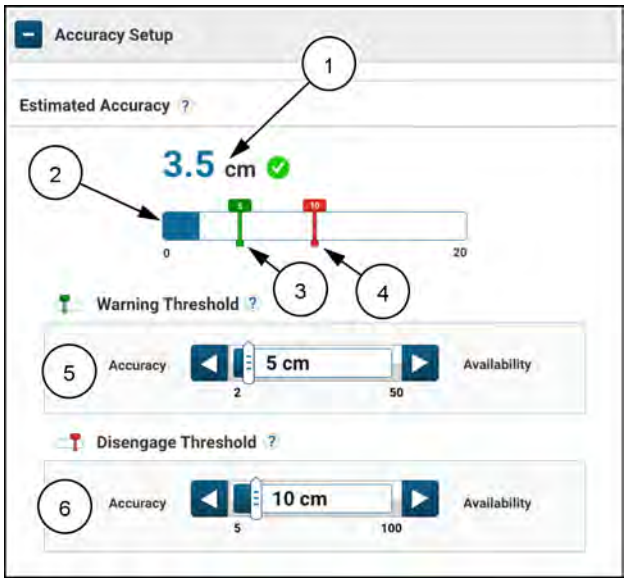
NHIL20PLM0360AA 5

Accuracy setup

When calculating the estimated accuracy for any correction type, the system uses the standard deviation for the particular correction type. The system calculates the estimated accuracy with the square root of the sum of the squares of the latitude standard deviation and the longitude standard deviation. The system does not use the height standard deviation.

The “Estimated Accuracy” value displays the system estimated accuracy **(1)** in centimeters or inches. The accuracy value shown takes into account forward, backward, and side-to-side accuracy. A lower number represents a lower amount of expected error and thus more accuracy. However, It reflects how large the location inaccuracy could be and will be larger than the individual inaccuracies you observe in the field.

NOTE: *The scale of the bar graph differs, depending on your primary correction type. Threshold values are saved based on correction type.*



NHIL20PLM0023AA 1

The system displays a bar graph **(2)** to illustrate how the estimated accuracy may be improving towards or degrading away from the threshold that you define on this screen. The estimated accuracy bar graph is dynamic and updates as the estimated accuracy changes.

The estimated accuracy bar graph displays two indicators:

- The green indicator **(3)** represents the warning threshold. If the estimated accuracy exceeds this threshold, the system displays an alert.
- The red indicator **(4)** represents the disengage threshold. If the estimated accuracy exceeds this threshold, the system disengages autoguidance.

  NOTE: *If the system is not yet engaged, then you cannot engage guidance until the estimated accuracy is below the disengage threshold.*

Drag the slider to adjust the warning threshold value **(5)** and the disengage threshold value **(6)**. Use the left and right buttons to fine tune the adjustment, if necessary.

The settings will depend on the level of accuracy that your work requires, as the settings affect the signal accuracy required for initial convergence. The system will continue to converge to the full signal accuracy of the selected technology, but the system becomes available for use earlier.

First, determine the acceptable amount of cross track error. Initially, the warning slider can be set to twice that amount and the disengage slider can be set higher than that. As you operate, check your maps and lower the disengage threshold as necessary to fix any field issues.

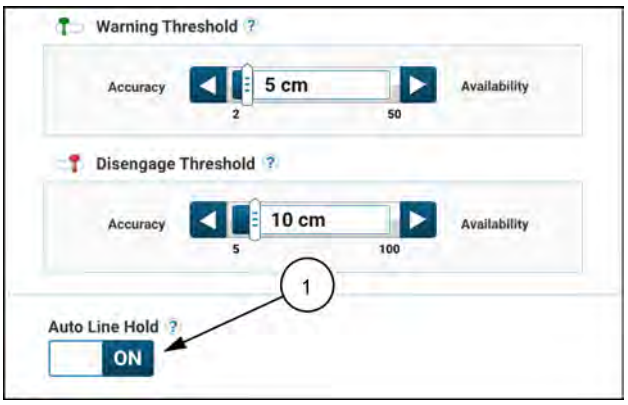
Additionally, if the planned work does not require the highest level of accuracy, increase the threshold values so that the system will be available for use earlier. With increased threshold values, the system will not disengage as often if the GNSS signal conditions degrade, which may occur if driving near trees or buildings, or if the GNSS signals are distorted by atmospheric conditions.

If you experience accuracy values that are higher than your desired maximum cross track error, this is to be expected. If the accuracy value is higher than your cross track error, but your mapping and guidance are still functioning as expected, the system is operating normally.

The estimated accuracy must be below the disengage threshold before you can engage guidance.

The “Auto Line Hold” feature **(1)** can be enabled under the “Accuracy Setup” menu. The “Auto Line Hold” feature allows for a smoother transition when your correction source temporarily switches to a lower accuracy backup solution. This feature is especially useful for precision steering applications where sudden jumps may be disruptive, and allows you to operate the vehicle with autoguidance engaged without manual intervention, nudging, or remarking in areas where your correction signal is blocked.

The “Auto Line Hold” feature should always be enabled with a higher accuracy correction source, such as AFS corrections or RTK, to ensure accurate steering in times of temporary primary correction signal outage.



NHIL20PLM0024AA 2

For example, consider a crop operation that requires repeatability to within **15 cm** (**6 in**) of a previous pass and that RTK and SBAS are enabled with the accuracy slider set at **15 cm** (**6 in**).

- Without the “Auto Line Hold” feature enabled, a temporary outage of RTK corrections would cause a sudden transition to a lower-accuracy SBAS position that might be up to **0.9 m** (**3 ft**) off line and result in either a sudden sharp corner or the disengagement of autoguidance.
- With the “Auto Line Hold” feature enabled, the receiver uses the previously-known position and high quality propagation combining GNSS and inertial measurement to extend the solution smoothly and continue operation.

Accuracy will degrade slowly over time in a smooth drift until the **15 cm** (**6 in**) accuracy level can no longer be assured. If RTK corrections are restored before that point, the system will recover quickly and steer smoothly back to the center of the line, all without needing any operator intervention.

"GNSS Position Output" menu

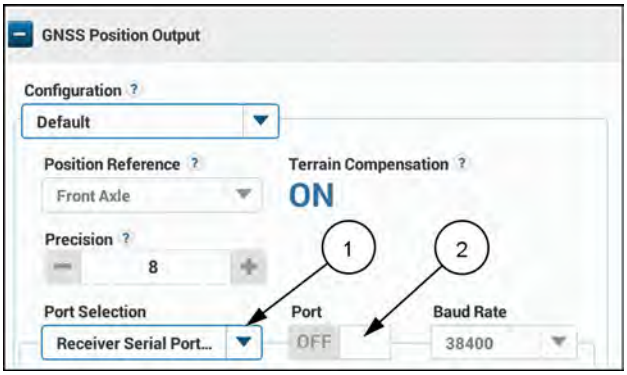
Messages that conform to the **NMEA 0183®** serial standard can be output on the system serial ports for use by systems that require it. Messages that conform to the **NMEA2000®** Controller Area Network (CAN) standard can be output on the **ISO 11783** CAN for use by **ISO 11783** systems that require it.

View the default configuration or create a new configuration with the “Configuration” drop-down menu to setup **NMEA®** serial output. You must first create a new configuration in order to use settings other than the settings stored in the “Default” configuration.

You can create up to ten RS-232 configuration setups. Each setup can contain any combination of the serial ports from the receiver.

If the “Default” configuration is selected:

- You cannot modify any fields except for the “Port Selection” field **(1)**.
- You cannot change the state **(2)** of the selected port.
- You cannot edit any corresponding settings or **NMEA®** messages that appear for the selected port.
- Both serial ports are OFF.
- The PGN129026 and the PGN129029 message are both ON at a rate of **10 Hz**. All other messages are OFF.

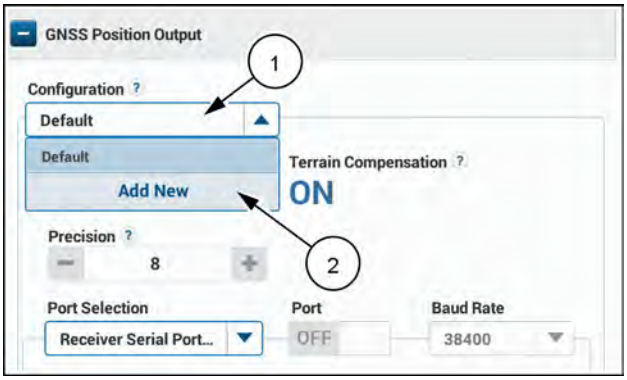


NHPH23PLM1545AA 1

To create a configuration, press the “Configuration” drop-down menu **(1)**, and then press the “Add New” button **(2)**.

Define your new configuration name, and then press the “OK” button.

NOTE: *Any changes that you make within the “GNSS Position Output” settings will be automatically saved to your selected configuration.*



NHPH23PLM1546AA 2

Once you have an added configuration to the drop-down menu, the following actions are available:

Icon	Function
	Edit configuration name
	Delete configuration

“Position Reference”

It is possible to output GNSS position with terrain compensation **(1)** to a corrected position that is calculated by the offsets recorded on the vehicle measurements screen. See ”Measurements” Screen (**4-52**).

“Position Reference” **(1)** is used to determine the location where the output position is calculated.

By default, “Front Axle” (the control point of the vehicle) is selected.

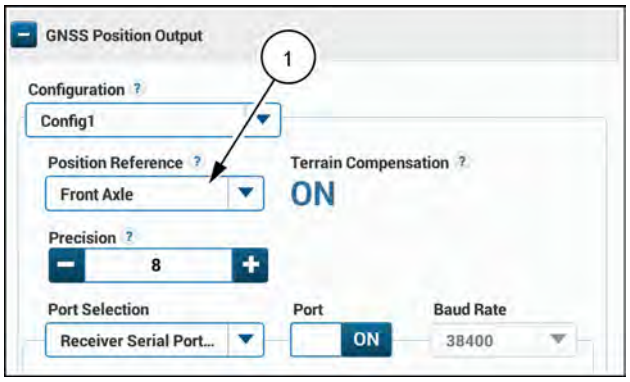
NOTE: *The control point of the vehicle is relative to the type of vehicle. “Front Axle” displays for rear wheel steer or articulated vehicles, while “Rear Axle” displays for front wheel steer vehicles.*

“Front Axle” (or the control point of the vehicle) **(2)** outputs a position that is on the ground, below the center of the axle.

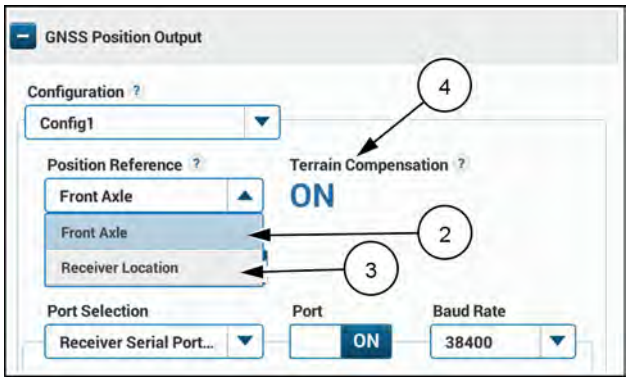
- If “Front Axle” (or the control point of the vehicle) is selected, “Terrain Compensation” **(4)** is active and the position output automatically compensates for the roll, pitch, and heading of the receiver on the roof.

“Receiver Location” **(3)** outputs the position of the GNSS receiver mounting location.

- If “Receiver Location” is selected, the actual position of the receiver antenna is reported and “Terrain Compensation” is OFF.



NHPH23PLM1547AA 3



NHPH23PLM1549AA 4

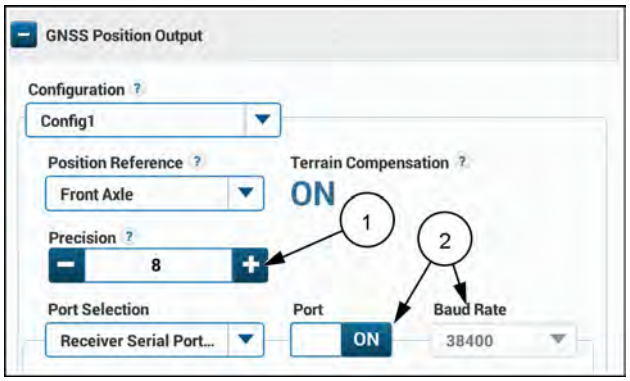
“Precision”

Press and hold the value box **(1)** or use the plus and minus buttons to change the precision value.

NOTE: *Modifying the precision value will make the message non-compliant with the* ***NMEA®*** *standard. Edit this setting for applications which require greater or fewer digits of precision. For most applications, use the default setting.*

Before configuring the individual serial messages, turn the port “ON” and select the appropriate baud rate **(2)**.

NOTE: *If the port is correctly configured and turned “ON,” you may edit all relevant settings and messages for that port. If the port is correctly configured but turned “OFF,” the relevant settings and messages for that port will appear as read-only.*



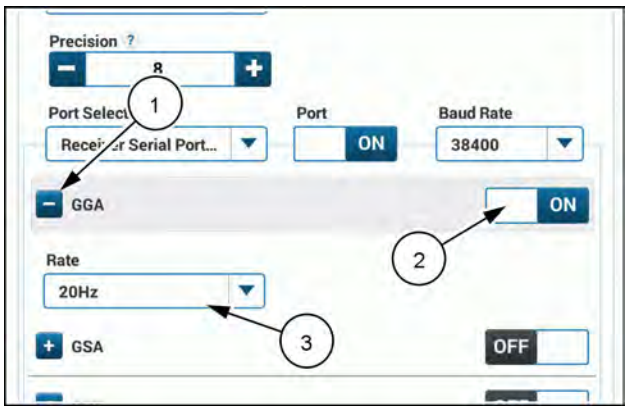
NHPH23PLM1547AA 5

Serial port NMEA® messages

The following **NMEA®** messages are available on the serial ports:

- GGA – Global Positioning System (GPS) fix data and undulation
- GSA – GPS Dilution of Precision (DOP) and active satellites
- GST – Pseudo-range measurement noise statistics
- RMC – GPS-specific information
- VTG – Track made good and ground speed
- ZDA – Coordinated Universal Time (UTC) time and date

To enable each message, press the drop-down menu **(1)** and press the button **(2)**. To adjust the output rate of each message, press the “Rate” drop-down menu **(3)** and select an output rate from the available values.



NHPH23PLM1550AA 6

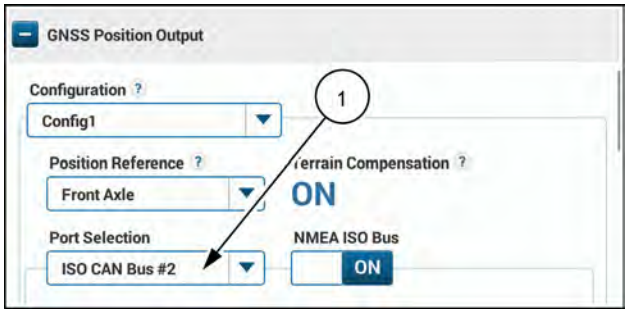
CAN bus NMEA2000® messages

If the “ISO CAN BUS #2” port **(1)** is selected, it is possible to enable (“ON”) or disable (“OFF”) the transmission of **NMEA2000®** serial messages over the Controller Area Network (CAN) bus.

The following Parameter Group Numbers (PGN) are available on CAN:

- PGN 129025: Position, rapid update
- PGN 129026: Course over Ground (CoG) & Speed over Ground (SoG), rapid update
- PGN 129027: Position delta, high precision rapid update
- PGN 129029: GNSS position data
- PGN 129551: GNSS differential correction receiver signal
- PGN 126992: System time
- PGN 129283: Cross-track error
- PGN 65256: Vehicle direction and speed [1]

NOTE: *[1] Requires CGR software 2.1.0.0 or higher*



NHPH23PLM1548AA 7

Emulated radar output

In some planting and spraying operations, a radar sensor is used as a reliable speed source for accurate product application. Poor radar sensor performance may occur due to challenging conditions.

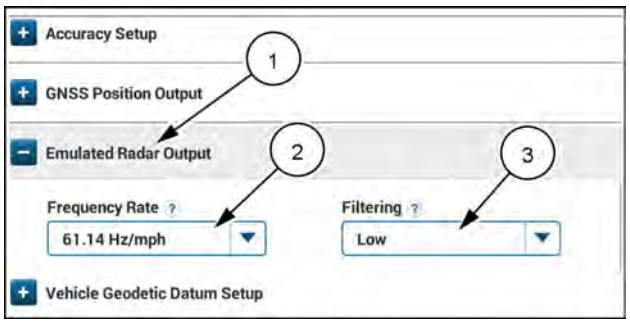
If the radar sensor is providing erroneous speed signals, you can use the receiver to emulate the radar output to utilize in place of poorly-performing radar sensors.

The emulated radar output signal is available at pin 7 on port B at the rear of the receiver. See your dealer for the appropriate cabling to utilize the emulated radar output signal from the receiver.

From the "GNSS & Guidance" screen, expand the "Emulated Radar Output" menu **(1)**.

The frequency rate determines how the emulated radar output relates to the vehicle speed. Set the desired frequency rate from the "Frequency Rate" drop-down menu **(2)**, or select "OFF" to turn emulated radar output off.

The filtering option determines how quickly changes in speed are reflected in the emulated radar output. Higher filtering smooths the speed and reduces noise, but reduces responsiveness. The "Auto" setting will adjust the filtering based on ground speed. Set the desired filtering option from the "Filtering" drop-down menu **(3)**.



NHIL22PLM0463AA 1

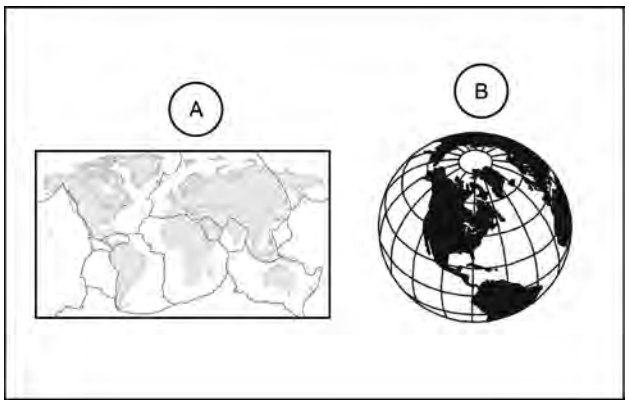
Vehicle datum selection

What is a datum?

A datum is a set of reference points that the system uses to calculate the on-ground position of the vehicle.

There are two types of datum anchors: plate-fixed **(A)** and Earth Centered/Earth Fixed (ECEF) **(B)**.

Plate-fixed datums are more common in agriculture, as the datum reference stations move with the tectonic plate, inherently accounting for plate movement and providing consistent calculations year-over-year for a given position on the ground.



NHIL20PLM0307AA 1

Each datum has a reference date. The reference date is the date that the previously-measured on-ground position had a particular set of coordinates. There are two types of reference dates: fixed epoch and current epoch.

- A current epoch reference date changes each day the system operates, and is always set to the current date.
- A fixed epoch reference date remains fixed at a specific date. Since ECEF-type datums are fixed to the Earth and not anchored to any plate, the movement of the tectonic plates results in drift over time of the on-ground position relative to the datum. By selecting a fixed epoch reference date, the system automatically compensates for the tectonic movement to provide repeatable year-to-year on-ground positions.

In order for a GNSS solution to result in the same on-ground position, the datum must always match. This applies to any instance where a datum mismatch could occur such as use of previously recorded data and switching between correction sources.

- In the case of using previously recorded data (e.g. existing swaths, boundaries, and obstacles), the datum that was being used when that data was recorded must match the datum the current vehicle is operating in.
- When switching between correction types, it is important that the same datum is used to avoid shifts in the computed on-ground position.

In either case, if a datum mismatch occurs, there will be a discrepancy between the expected and actual on-ground position of the vehicle.

Datum selection

The selected datum for your operation depends on your correction type; some datum configurations are compatible with both Real-Time Kinematic (RTK) corrections and AFS corrections, and some are not.

For RTK corrections, your selection for vehicle datum should match the datum that the base station is surveyed in. A few common use cases are as follows:

1. The same vehicle switches between RTK (via radio or NTRIP) to a satellite-delivered correction signal (AFS 1, 2, or 3) in the same field.
   - If the datum used to survey the RTK base stations is known and is different from the default datum in the **Pro 1200** display, changing the datum used for AFS 1, 2, or 3 to the same datum used to survey the RTK base station will re-align the on-ground position for a given set of latitude and longitude coordinates.
   - If the datum used to survey the RTK base station is not known, or the RTK base station was never surveyed, the best option to try to re-align the on-ground positions is to remark the guidance line (no datum change selection).

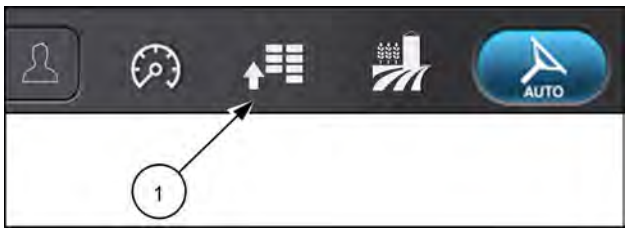
     NOTE: *There will not be a relative position shift between vehicles when multiple vehicles are using the same RTK correction signal source – regardless of the brand of the GNSS receiver.*
2. A mixed fleet is using several brands of precision farming systems that utilize different brand receivers and/or satellite-delivered correction signals. The ability to manage datum usage allows you to operate with the **Pro 1200** display seamlessly with mixed fleets, resulting in matched on-ground positions of previously-recorded swaths, boundaries, and obstacles. This accuracy is crucial for proper guidance and geo-spatial functions (such as section control) when operating in a mixed fleet.
   - If the datum being used by the Non-Case IH branded precision farming system is known and different from the default datum selected in the **Pro 1200** display, changing the datum selection in the **Pro 1200** display to match that used by the other system will re-align the on-ground position for a given set of latitude and longitude coordinates.
   - If the datum being used by the Non-Case IH branded precision farming system is not known, the best option to try to re-align the on-ground positions is to remark the guidance line (no datum selection change).
3. Depending on the operating region of the vehicle, a change to the datum selection may be required.
   - In many regions, a well-known plate-fixed datum is in common use. This is most likely the correct datum, unless the base station was not surveyed correctly or according to local practices with using the common datum for that region.
   - In other regions, there may be more than one datum in common use. The system may recommend one datum, but you may have to manually change the selection if your base station was surveyed in another datum.
   - In a few world regions, there is not a well-defined plate-fixed datum in common use. In these cases, the system will default the vehicle datum selection to “Unknown”. CASE IH recommends that you determine the datum of your base station and manually select that datum in the system. If you set up your base station and use the automatic survey function without further post-processing the base station location data, the datum of the base station remains an unknown datum since post-processing is required for the datum to be known.

When operating with RTK corrections with AFS backup corrections, it is particularly important to ensure the correct datum is selected. If not, the vehicle may experience a position shift when the correction falls back from RTK to AFS backup corrections.

NOTE: *Even with the incorrect datum selected, you will not experience a position shift while RTK Fill is in use. However, after RTK Fill is exhausted and the system falls back to AFS backup corrections, you could experience a position shift if the vehicle datum selection does not match the actual datum of your RTK base station.*

For SBAS corrections (WAAS, EGNOS, etc), all systems use the same datum (ITRF2000 @ Current Epoch), so the datum is automatically selected with no change possible.

To manually select your vehicle datum, press the button **(1)** on the top bar to navigate to the “Menu” screen. Press the “Settings” tab, if necessary.



RAIL19PLM0121AA 2

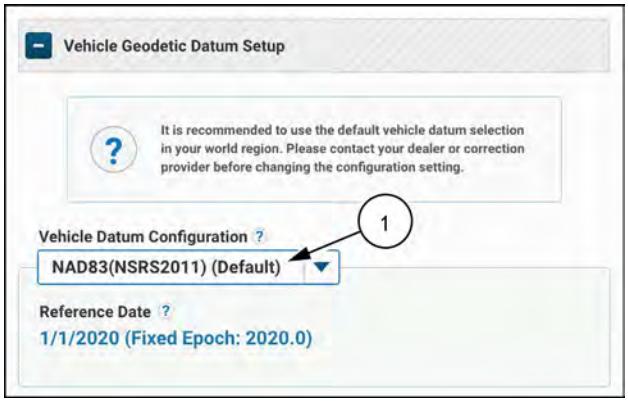
Press the “GNSS & Guidance” card to open the “GNSS & Guidance” setup card.

Press the “plus” icon next to the “Vehicle Geodetic Datum Setup” menu.

NHPH22PLM0543AA 3

The drop-down menu is grayed out until the vehicle obtains a GNSS position to determine the general location of the vehicle. When your position is established, the recommended default datum for your vehicle is automatically selected.

Additional vehicle datums (if available) and user-defined vehicle datums are stored in the vehicle datum configuration. Press the “Vehicle Datum Configuration” drop-down menu **(1)** to change your vehicle datum.



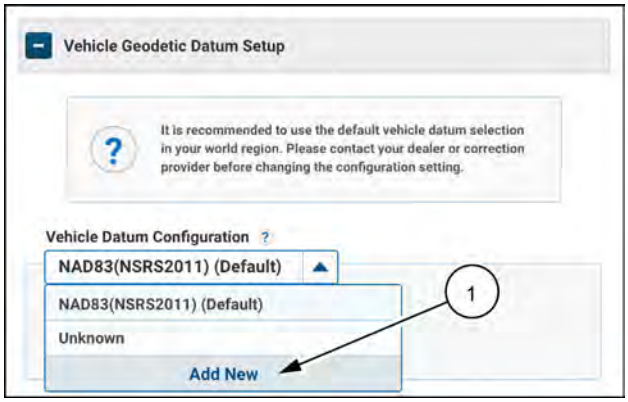
NHIL20PLM0452AA 4

The available selections depend on the operation region of the vehicle and the correction type that is in use.

Press the “Add New” button **(1)** to define a new configuration.

NOTE: *The system can store up to ten vehicle datum configurations. SBAS corrections do not support custom vehicle datum configurations, as all SBAS systems use the same geodetic datum (ITRF2000 @ Current Epoch).*

If you have any user-defined vehicle datums, then you can also edit or delete the vehicle datum configuration.



NHIL20PLM0453AA 5

Icon	Function
	Edit configuration name
	Delete configuration

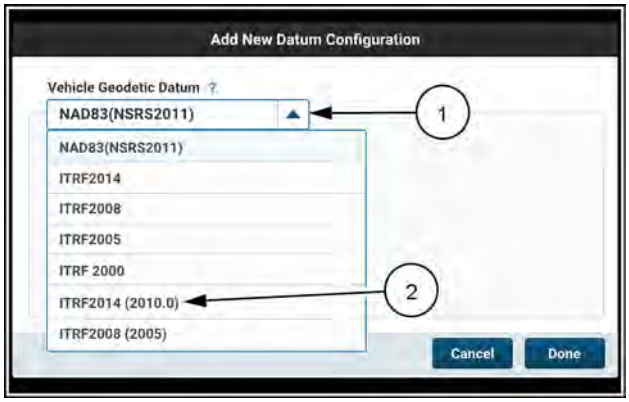
The pop-up window appears. Press the “Yes” button **(1)** to accept, or press the “Cancel” button **(2)** to return to the datum selection screen.

NOTE: *This pop-up window also appears when you attempt to change the datum to another available datum.*

NHIL20PLM0454AA 6

Press the “Vehicle Geodetic Datum” drop-down menu **(1)** and select your datum. Only the available datums that the system detected for your region can be selected.

NOTE: *Some datums have pre-defined fixed reference dates. In these cases, the fixed reference date* ***(2)*** *is shown in the drop-down menu, and the “Fixed” reference date option is grayed out and non-selectable.*

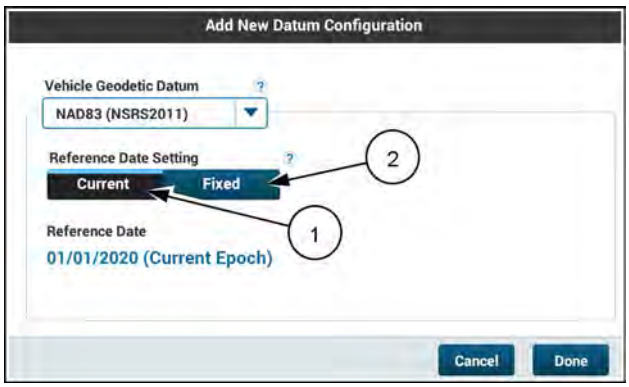


NHIL20PLM0457AA 7

Press one of the options to select your datum reference date type:

- Current **(1)** – The current date is used as the reference date, and updates as the current date changes.
- Fixed **(2)** – Manually define a fixed reference date.

  NOTE: *In some cases, the datum only supports a fixed reference date. The “Current” option will appear non-selectable.*

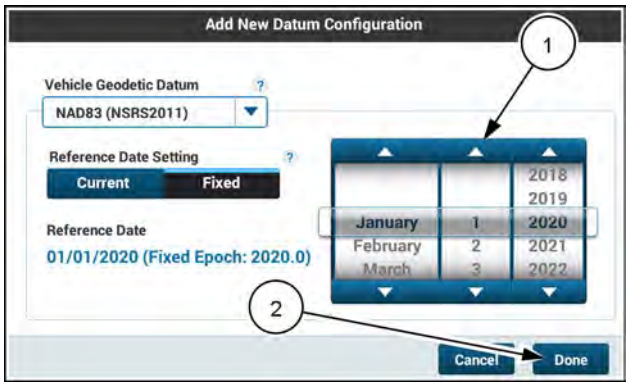


RAPH23PLM0398AA 8

To define a fixed reference date, use the tool **(1)** to select the fixed reference date.

Press the “Done” button **(2)** to save the new vehicle datum configuration.

NOTE: *If the custom vehicle datum already exists, the new configuration will not be saved and the existing datum will be selected.*



RAPH23PLM0397AA 9

The following table outlines the default vehicle datum selections for RTK and AFS 1, 2, or 3 corrections.

Default Vehicle Datums

Region	Vehicle Datum Name	Reference Date	AFS 1, 2, or 3	RTK	RTK+
North America	NAD83 (NSRS2011)	2020.0	√	√	√
Hawaii	NAD83 (PA11)	2020.0	√	√	√
Europe	ETRS89 (ETRF2000)	2020.0	√	√	√
Russia	ITRF2014	Current Epoch	√		
Russia	ITRF2008 @ 2005.0	2005.0			√
Russia	Unknown	– – –		√	
Australia	GDA94	2020.0	√	√	√
South Africa	ITRF2014 @ 2018.18	2018.18			√
South Africa	ITRF2014	Current Epoch	√		
South Africa	Unknown	– – –		√	
South America	SIRGASCON (ITRF2014)	2015.0	√		√
South America	SIRGAS2000 (ITRF2000)	2000.4		√	
Japan	ITRF2014	Current Epoch	√		
Japan	ITRF2008 @ 2005.0	2005.0			√
Japan	Unknown	– – –		√	
Rest of World	ITRF2014	Current Epoch	√		
Rest of World	Unknown	– – –		√	

Third-party receiver setup

GNSS receivers other than the **VectorPro** receiver can be used with the **Pro 1200** display.

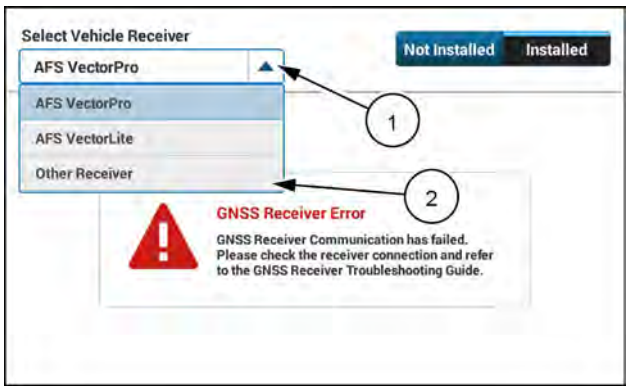
To set up third-party receiver, navigate to the “GNSS” screen in the "GNSS & Guidance" card.

Set the receiver to “Installed” **(1)**.

RAPH23PLM0399AA 1

Press the drop-down menu **(1)** and select “Other Receiver” **(2)**.

NOTE: *The drop-down menu is only active if the display does not detect a AFS VectorPro receiver connected to the vehicle.*



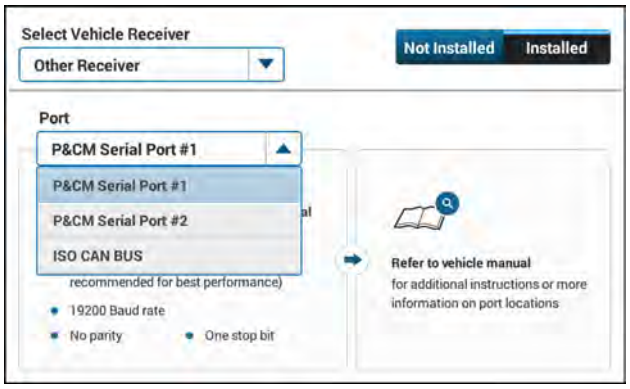
RAPH23PLM0402AA 2

The display can communicate with the third-party receiver through the serial ports the Processing and Connectivity Module (PCM) or on the ISOBUS Controller Area Network (CAN) bus.

Press the drop-down menu **(1)** and select one of the following options:

- “P&CM Serial Port #1”
- “P&CM Serial Port #2”
- “ISO CAN BUS”

The recommended receiver settings for your selected port are as shown.



RAPH23PLM0405AA 3

If “P&CM Serial Port #1” or “P&CM Serial Port #2” is selected, the third-party receiver must send GNSS position to the vehicle in the **NMEA 0183®** format.

Configure the receiver with the following settings:

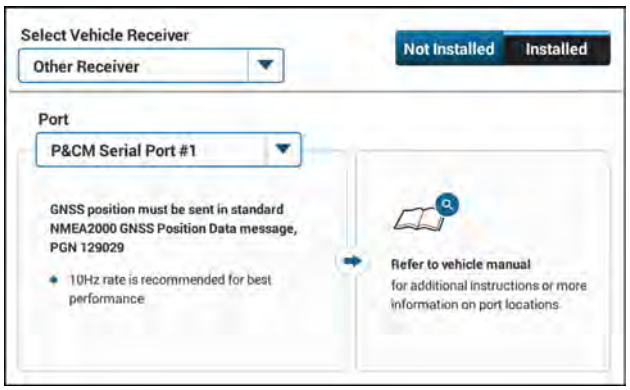
GGA message on at **10 Hz**

Baud rate set to **19200 bps**

One stop bit

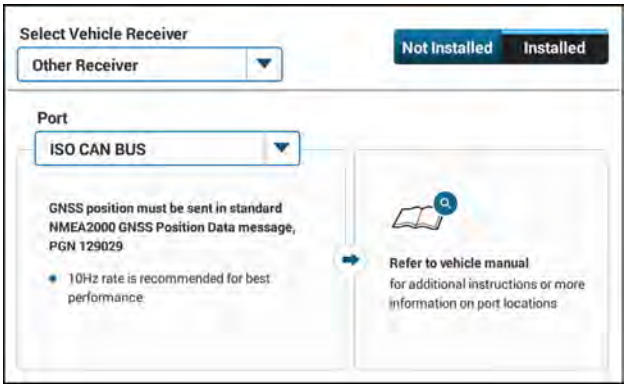
No parity

NOTE: *It is recommended that the receiver be set so that the GGA message has at least 8 decimal places in the latitude and longitude.*



RAPH23PLM0406AA 4

If “ISO CAN BUS” is selected, the third-party receiver must send GNSS position to the vehicle in the **NMEA2000®** standard, using the “GNSS position data” message PGN 129029.

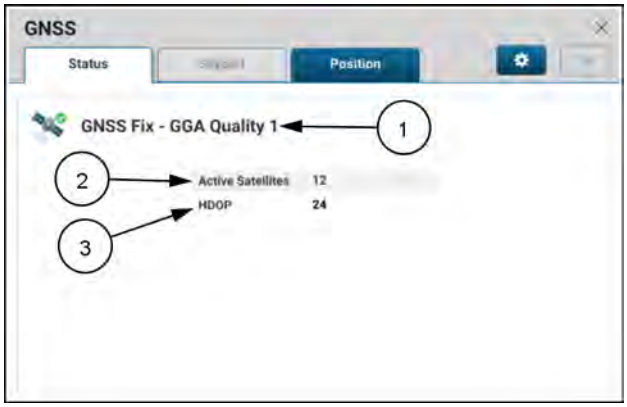


RAPH23PLM0407AA 5

When third-party receivers are used, limited GNSS status is available.

The “GNSS Status” screen displays:

- GNSS status **(1)**
- “Active Satellites” **(2)** – The number of satellites tracked by the receiver
- “HDOP” **(3)** – The Horizontal Dilution of Precision, a common GNSS metric that represents GPS signal quality at the vehicle location



NHIL20PLM0340AA 6

The GNSS status is either good (green) or bad (red), based on the data sent in the message from the third-party receiver.

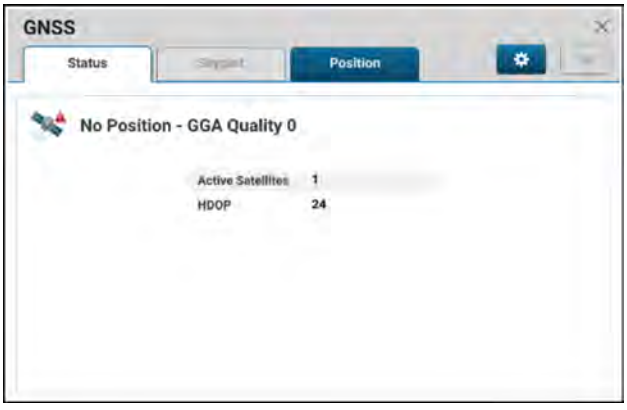
No additional GNSS troubleshooting information is available through the AFS Pro 1200 display.

Upon first startup, if the GNSS position is fixed but the vehicle heading is unknown, the “Drive to Determine Heading” status is shown.

Drive forward or speed up to allow the GNSS receiver to initialize and determine your heading.

NHIL20PLM0341AA 7

If the GNSS position is unknown, the “No Position” status is shown.

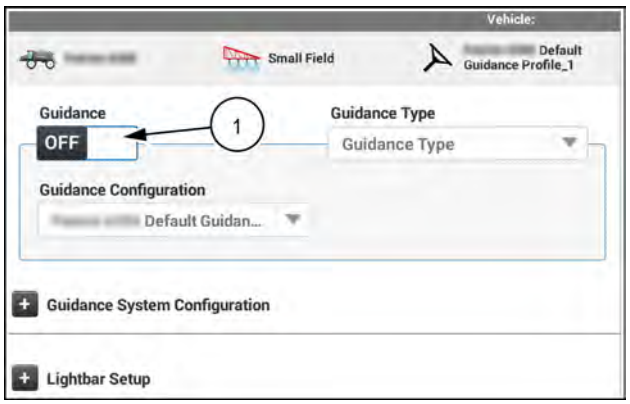


NHIL20PLM0342AA 8

"Guidance" screen

The “Guidance” screen contains setup information for your active guidance configuration.

If the guidance feature is disabled (“OFF”), the settings appear but are disabled. Press the button **(1)** to enable the guidance feature to access the additional settings.



RAPH21PLM1311AA 1

Guidance type

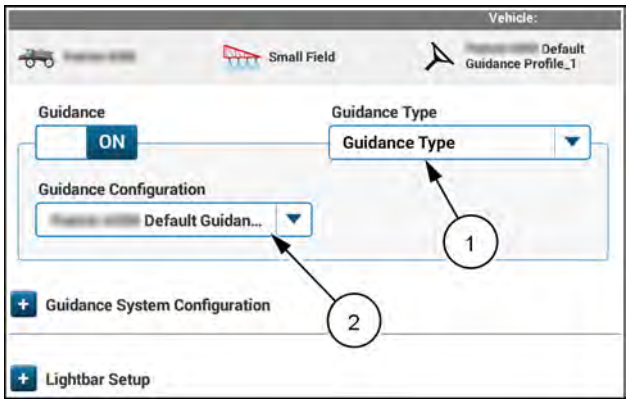
The GNSS receiver supports multiple guidance systems:

- **AFS AccuGuide™** – Vehicle is controlled using the integrated hydraulic steering option from CASE IH.
- Lightbar – Lightbar guidance can provide limited guidance to assist in manual steering along a swath pattern.

Upon enabling the guidance feature, the “Guidance Type” drop down menu **(1)** and the “Guidance Configuration” drop down menu **(2)** become active.

Before selecting a guidance configuration, you must first select the type of guidance system that is installed on your vehicle.

NOTE: *Guidance configurations cannot be shared between guidance types.*



RAPH21PLM1309AA 2

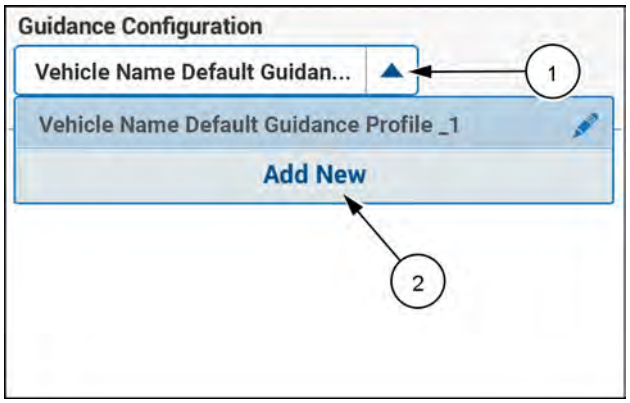
Guidance configurations

To edit, delete, or create a new guidance configuration, press the “Guidance Configuration” drop down menu **(1)**.

Icon	Function
	Edit configuration
	Delete configuration
“Add New”	Create configuration

NOTE: *The current selected guidance configuration cannot be deleted; the icon will be grayed out.*

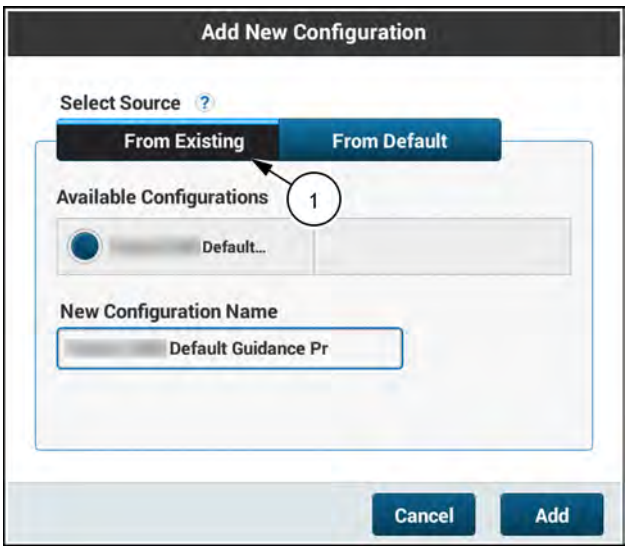
Press the “Add New” button **(2)** to create a new configuration, and then create a new configuration using one of two methods.



NHIL20PLM0594AA 3

Method one:

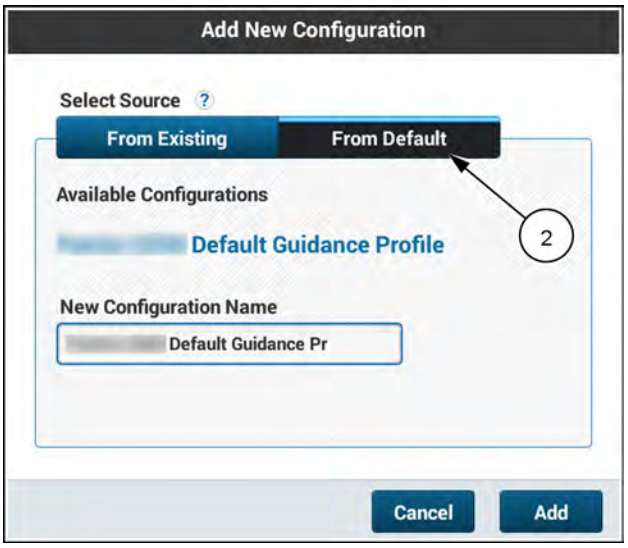
From Existing **(1)**: Create a configuration based on an existing configuration.



RAPH23PLM1231BA 4

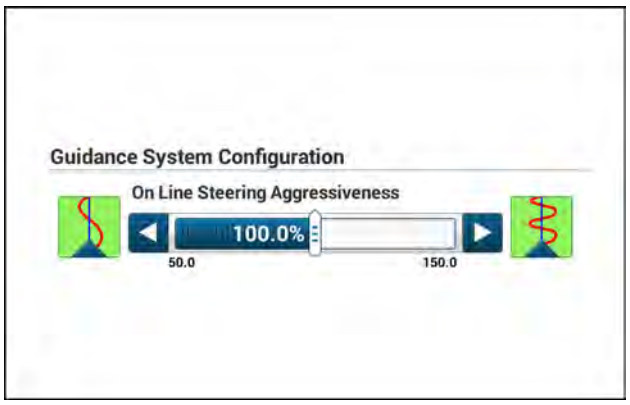
Method two:

From Default **(2)**: Create a configuration with the factory default values.



RAPH23PLM1232BA 5

Steering aggressiveness



NHIL19PLM0550AA 6

The On Line Steering Aggressiveness setting controls how quickly the vehicle steers during automatic operation to keep the vehicle on-line when driving a swath. The setting allows the operator to adjust system performance for changing soil conditions or vehicle equipment:

- A more aggressive (higher) setting results in a quicker but potentially jerkier response.
- A less aggressive (lower) setting results in a slower, smoother response.

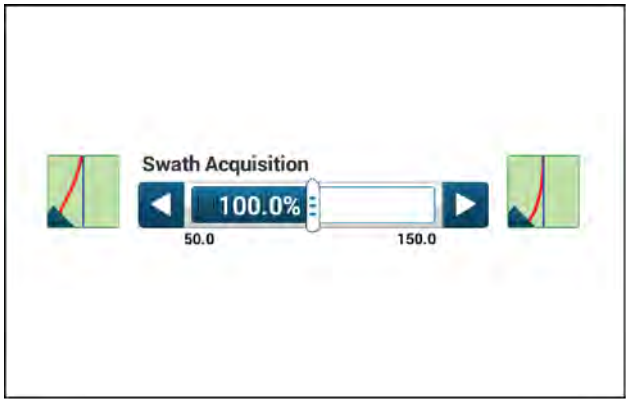
If the setting is too high, the wheels chatter with sudden, rapid movements.

If the setting is too low, the vehicle is lazy around the desired swath without quite aligning with the swath.

The goal is a prompt steering response that keeps the vehicle on-line without jumpy behavior. On the other hand, lower aggressiveness may result in higher cross-track error. Some experimentation may be required to find the right setting for each vehicle. Changes in soil conditions, vehicle equipment, and/or vehicle speed may also require a change to this setting to maintain optimal performance.

The acceptable range is from **50 – 150%**.

Swath acquisition



RAPH22PLM1768AA 7

Swath acquisition controls how sharply the vehicle turns once automatic operation has been engaged (while the system is bringing the vehicle onto the swath). The swath acquisition setting allows the operator to adjust system performance for headland depth, vehicle profile, and personal preference:

- A higher value results in the system using sharper turns to engage on the swath.
- A lower value results in the system using more gradual turns to engage on the swath.

If the setting is too high, the vehicle may become unstable when turning, particularly at higher speeds.

If the setting is too low, the vehicle may require a long distance to engage on the swath.

The acceptable range for swath acquisition is from **50 – 150%**.

NOTE: *Swath acquisition can also be added as a User-Defined Window (UDW) on a run screen.*

For more information, see “Swath acquisition” (**5-109**).

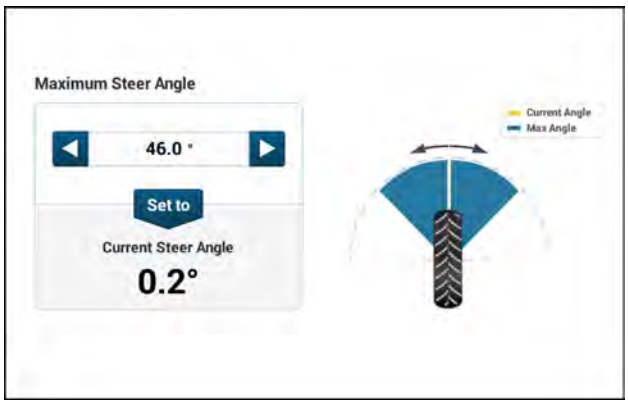
“Maximum Steer Angle”

The maximum steering angle is the largest turn angle that the steered axle of the vehicle will use during swath acquisition at low speeds.

The optimal value depends on the vehicle and on the operator’s preference.

The maximum steer angle setting allows the operator to:

- Maintain good stability while turning during automatic operation.
- Limit harsh or tight turns during automatic operation, for operator comfort.



NHIL20PLM0598AA 8

“Active Swath Point”

The active swath point setting determines the point at which the active swath is selected. This setting is important when an operator is manually driving through a field and trying to select a particular swath before engaging autoguidance.

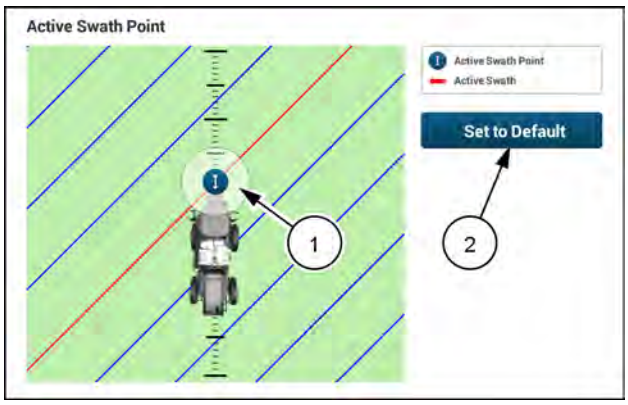
For most applications, an operator would want this point to be at the nose of the vehicle or front implement. For some applications with very wide swaths, like spraying, an operator might want this point far out beyond the nose of the vehicle.

For some applications with very slim swath widths, like a four-row planter, an operator might want this point near the center of the vehicle or at the rear axle.

To adjust the active swath point value, drag and drop the circle **(1)**.

With the zero reference point being at the fixed axle of the vehicle, the minimum active swath point is **-10 m** (**-32.8 ft**).

Press the “Set to Default” button **(2)** if you wish to discard your changes.

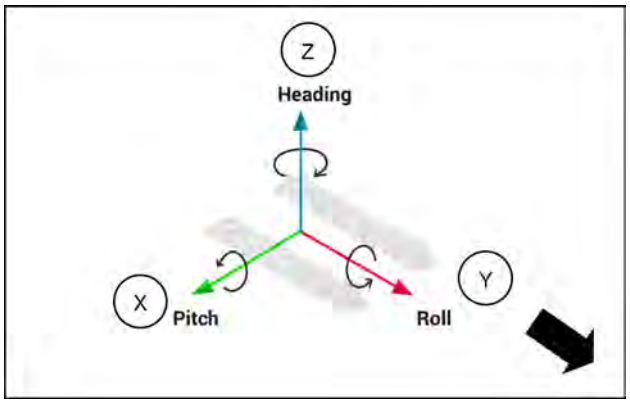


RAPH21PLM1310AA 9

"Measurements" screen

Offset values, which describe the distance between the receiver and the vehicle reference point, are required to achieve more accurate swath alignment, product application, and data mapping. The cross-track error is calculated at the corrected reference point, which provides the operator with the corrected GNSS position for higher accuracy. The required measurements will vary based on vehicle type.

Figure **1** shows the vehicle orientation as defined by the system.



NHIL20PLM1785AA 1

- **(X)** – Pitch, measured counter-clockwise (positive) when viewed from the right-hand side. Positive pitch is when the nose of the vehicle is up.
- **(Y)** – Roll, measured clockwise (positive) when viewed from the rear. Positive roll means that the left-hand wheels of the vehicle are higher than the right-hand wheels.
- **(Z)** – Heading (azimuth), measured clockwise (positive) when viewed from above.

  NOTE: *The azimuth measurement is the opposite of yaw.*

For each vehicle, the following data should be defined:

- GNSS antenna location measurements
- Physical vehicle measurements

Vehicle reference points

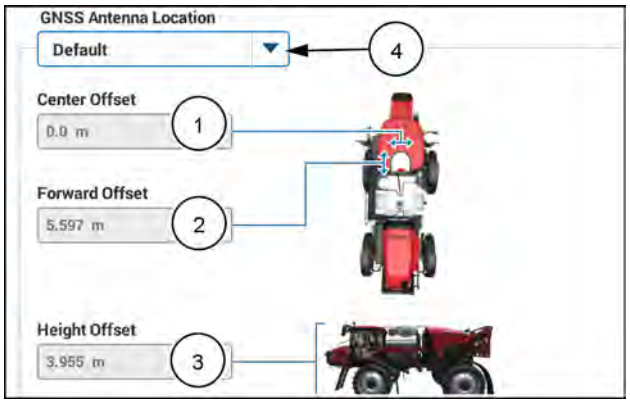
For sprayers and floaters the reference point is the center line (+X) of the fixed axle.

GNSS Antenna Location

For all vehicles, the GNSS antenna location is defined by three measurements:

1. Center offset: The distance from the roll center line, or “Y” axis, to the receiver.
2. Forward offset: The distance from the receiver to the vehicle reference point, which will vary by vehicle.
3. Height offset: The distance from the bottom center of the receiver to the ground.

   NOTE: *An accurate “Height Offset” value is critical for good assisted steering performance. Tire size can affect this value significantly, so always measure the offset for your vehicle when you set up the receiver for the first time or when you change the tires on your vehicle. Position the vehicle on flat, level ground to measure height offset.*



RAPH21PLM1398AA 2

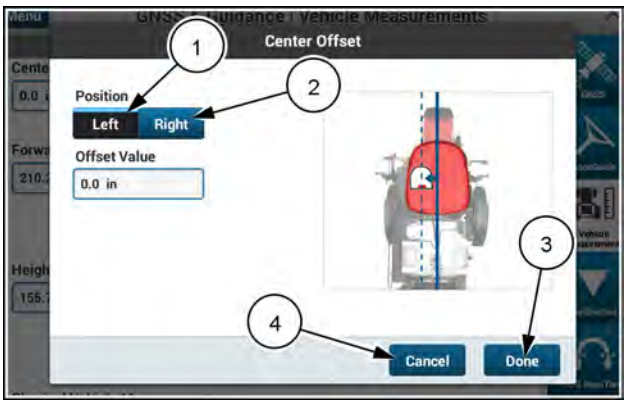
The offset values of the receiver are pre-configured in the display and should not require adjustment. If you must adjust the offset values, change the “GNSS Antenna Location” setting **(4)** from “Default” to “Custom”.

To set one of the measurements for a custom GNSS antenna location, press the value box. The window for that specific measurement appears; for this example, the measurement is “Center Offset”.

If the receiver is offset to the left-hand side of the center line, then select “Left” **(1)**. If the receiver is offset to the right-hand side of the center line, then select “Right” **(2)**.

Enter the value for the offset measurement. The receiver will move according to the position and the offset value that you select. The solid line indicates the default reference for the vehicle, and the dotted line indicates the center of the receiver.

Press “Done” **(3)** to save the offset value and return to the measurements screen. Press “Cancel” **(4)** to discard the value.



RAPH23PLM0390AA 3

Physical Vehicle Measurements

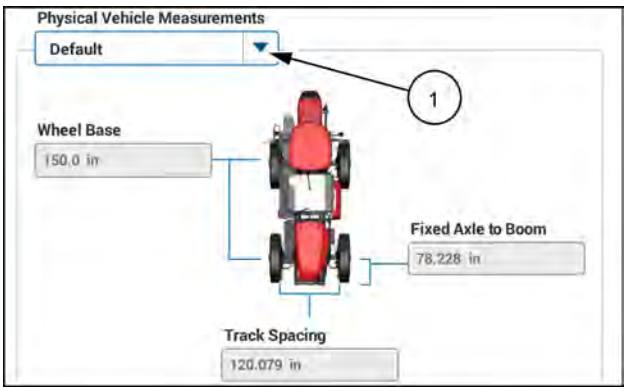
The physical vehicle measurements are set in the same way as the GNSS antenna measurements. However, the specific type of measurement will vary based on vehicle type.

The physical vehicle measurements are pre-configured in the display and should not require adjustment. If you must adjust the offset values, change the "Physical Vehicle Measurements” setting **(1)** from “Default” to “Custom”.

Rear mounted sprayer

For rear mounted sprayers, the following physical vehicle measurements are available:

- Wheel base
- Fixed axle to boom
- Track spacing



RAPH21PLM1126AA 4

Guidance calibrations

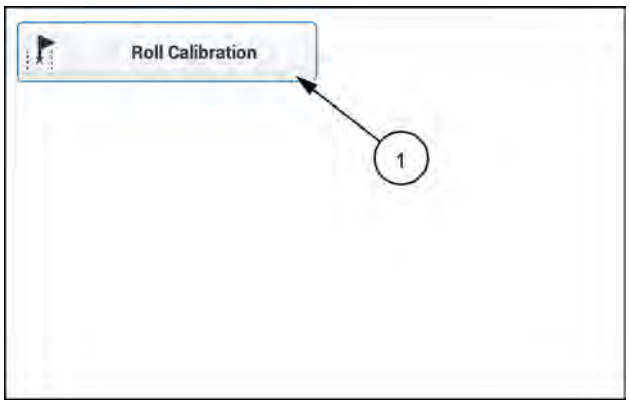
"Calibrations" screen

All calibrations related to automatic steering and guidance are located on the “Calibrations” screen within the “GNSS & Guidance” card.

Each time that a calibration process is interrupted in any way (manual override, pushing a button on the screen, etc.) and then started again, the calibration will resume from the point where the last calibration value was saved. This will not be the case if you exit the calibration screen. Before leaving the calibration screen, a warning will appear to state that the calibration is not completed and that calibration values will be lost.

NOTE: *Roll calibration is not available when guidance is engaged.*

Press the desired calibration **(1)** to begin.



NHIL20PLM0600AA 1

Roll calibration

The “Roll” calibration can be completed using the automated roll calibration or the manual roll calibration.

NOTE: *The display saves up to five calibrations for different receivers. The saved calibration for a specific receiver will be recalled if the receiver is removed from the vehicle, and then returned to the original vehicle. Always confirm that the calibrated values are recalled by checking the date shown on the “Calibrations” screen.*

NOTE: *Before you start a roll calibration, make sure the system is fully initialized. Ensure that the estimated accuracy, defined in centimeters or inches, is good as seen in the “GNSS” screen for your given correction type. Use the most accurate correction type possible for the best possible results. See “Status screen” (**3-26**) for more information about estimated accuracy.*

NOTE: *You will define the end point and start point of the calibration swath (straight, A-B line) that you will drive during the calibration. When driving, maintain the vehicle speed at the level within the set speed range required to perform this calibration. If you drive the swath too slowly, the system will require you repeat the pass again. Additional passes will refine the calibrated values and, in turn, result in more accurate guidance performance.*

NOTE: *Perform a new roll calibration when changes to the vehicle configuration are made, such as changing tires or ballasting.*

NOTE: *You cannot initiate a roll calibration while the guidance system is engaged.*

The “Roll Calibration” screen provides the calibrated roll, pitch, and heading values **(1)**, as well as the date on which the last calibration was performed.

Press the “Auto” button **(2)** to begin the automated roll calibration.

Press the “Manual” button **(3)** to begin the manual roll calibration.

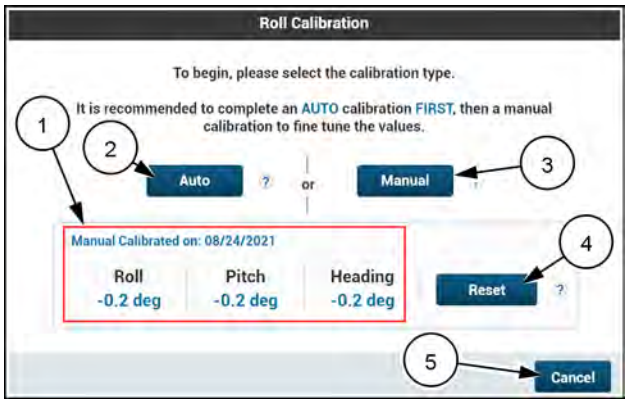
NOTE: *The pitch and heading values are also calibrated during the automated roll calibration.*

To reset the stored values from the previous roll calibration to the default value of zero, press the “Reset” button **(4)**. The system will reset the stored roll, pitch, and heading values.

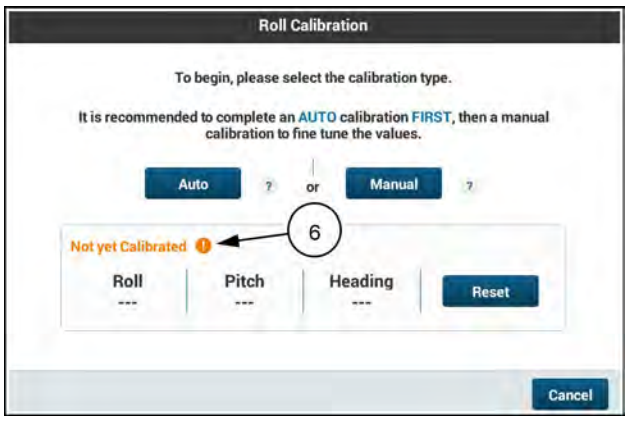
NOTE: *If you reset the stored values, the values cannot be recovered and a new roll calibration must be performed.*

NOTE: *If you press the “Cancel” button **(5)** any time it is active, the calibration procedure stops and the most recently stored calibration values remain in the software.*

NOTE: *If you are performing the first roll calibration in a display, the calibration values do not appear. The alert message, “Not yet calibrated” **(6)** appears.*



RAPH22PLM0894BA 1



RAPH22PLM0892BA 2

Automated roll calibration

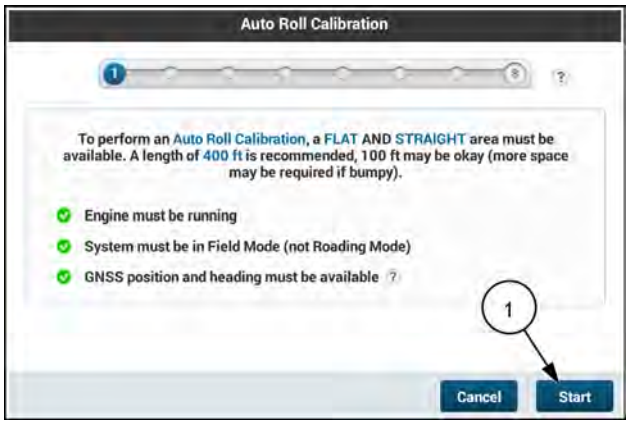
The automated roll calibration process allows you to proceed through the steps automatically, and does not require you to physically make any marks on the ground. After performing the automated roll calibration, you can still perform a manual roll calibration to confirm the calibration.

NOTE: *Do not attempt to access other screens in the display while performing the calibration, or progress will be lost.*

Before you start the Automated Roll Calibration, confirm that the following conditions are satisfied:

- A straight and flat area of at least **120 m** (**400 ft**) (recommended) is available directly in front of the vehicle.

  NOTE: *Less space may be OK, but you may need to perform more passes.*
- The vehicle is stopped.
- The engine is running.
- The operator is seated.
- The system is in Field Mode (not Roading Mode).
- The receiver has a fixed GNSS position.



RAPH22PLM0895BA 3

As each condition is satisfied, a green check appears; if the condition is not satisfied, a red warning sign appears and the “Start” button **(1)** will be inactive.

If all of the conditions are satisfied, the “Start” button will become active.

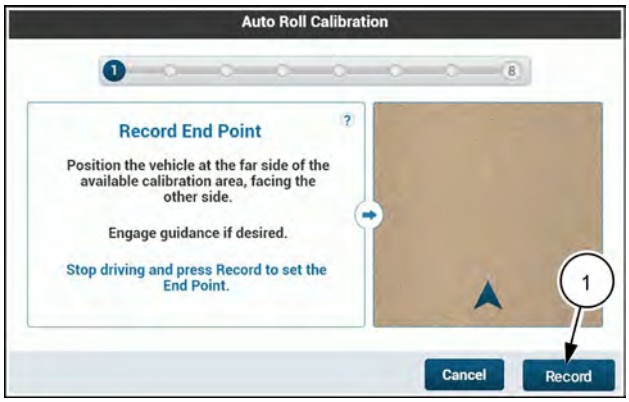
1. Press the “Start” button to begin the automated roll calibration.

Record the swath that you will use for the calibration.

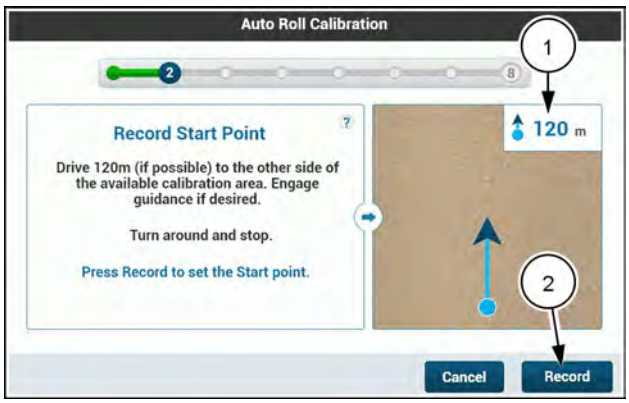
NOTE: *You will first record the end point (“B”), and then record the start point (“A”). Choose an area with sufficient space past the calibration swath to allow the system to engage and reduce cross track error before recording the calibration data.*

2. Position the vehicle at the far side of the available calibration area, facing the area at which you intend to start the calibration. Engage guidance, if desired.
3. Stop driving.
4. Press the “Record” button to set the stop point of the swath.
5. Drive the vehicle back to your intended starting point for the calibration. Engage guidance, if desired.

   NOTE: *The starting point should be at least **120 m** (**400 ft**) (recommended) for the calibration, but a lesser distance may be OK, depending on the terrain. The driven distance **(1)** is shown.*
6. Stop driving.
7. Turn the vehicle around, facing the previously recorded starting point as closely as possible. Stop the vehicle.
8. Press the “Record” button **(2)** to set the start point of the swath.



RAPH22PLM0897BA 4



RAPH22PLM0898BA 5

Make sure that:

- The vehicle is facing the recorded stop point to within **30°**.
- The vehicle is aligned with the recorded line between the start and end points.
- The vehicle is stopped before the recorded start point.

Drive the first pass.

9. Engage guidance to begin the calibration.

   NOTE: *It is important to engage guidance before you reach the start point, so that the guidance can align the vehicle before reaching the starting point of the calibration. Be prepared to take control of the vehicle at the completion of each pass.*

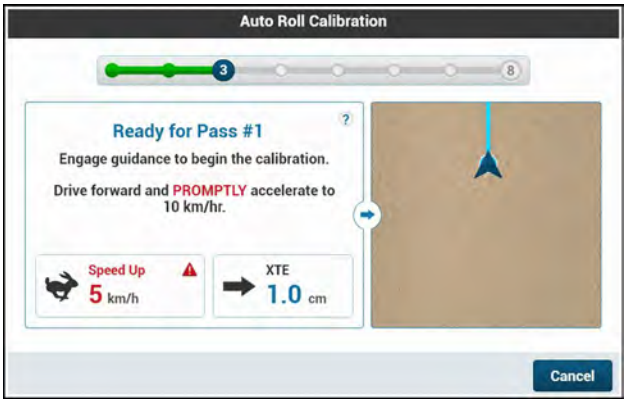
10. Drive forward and promptly accelerate to **10 km/h** (**6 mph**).

11. Allow the vehicle to automatically steer down the calibration swath, maintaining a speed of **10 km/h** (**6 mph**).

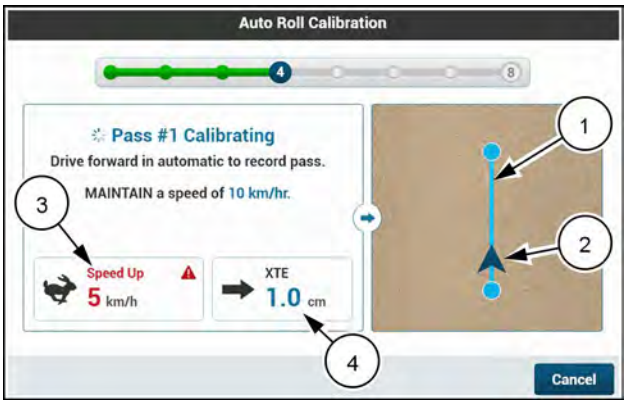
The screen displays the calibration swath **(1)**, current position **(2)**, vehicle speed **(3)**, and cross-track error **(4)**.

12. The pass is complete. Turn the vehicle around to prepare for the return pass.

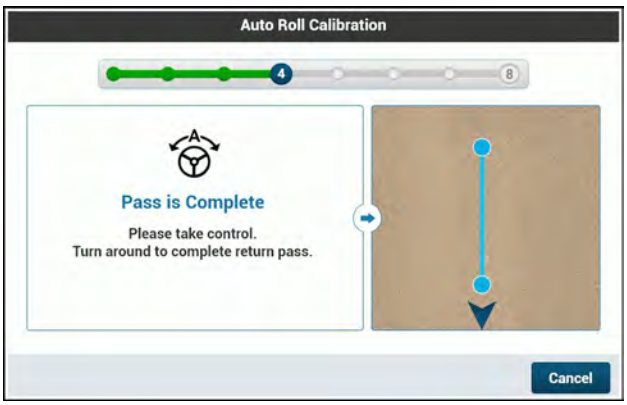
13. After you reach the end point, turn the vehicle around and align to the calibration swath.
14. Engage guidance.
15. Drive forward and promptly accelerate to **10 km/h** (**6 mph**).



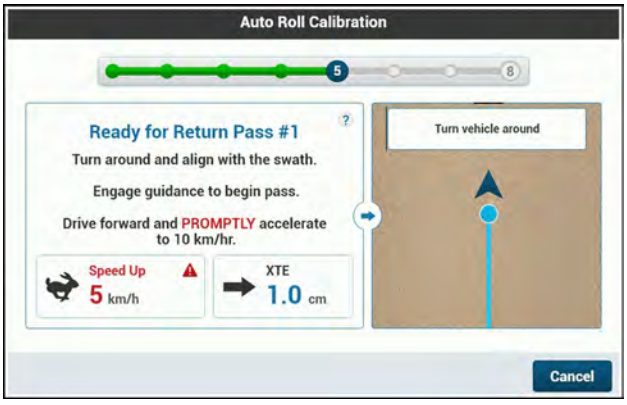
RAPH22PLM0899BA 6



RAPH22PLM0900BA 7

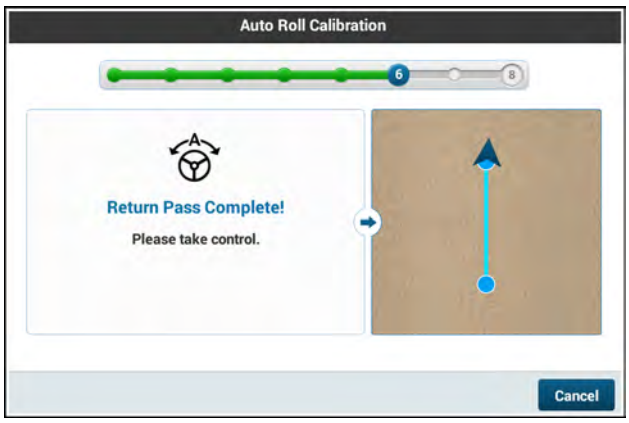


RAPH22PLM0901BA 8



RAPH22PLM0902BA 9

When you complete the return pass, the display reads, “Return Pass Complete!” Take control of the vehicle.



RAPH22PLM0896BA 10

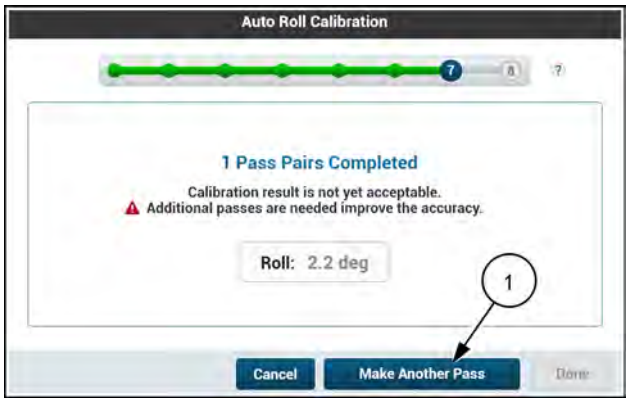
The next screen displays how many passes you performed, the calibration status, and the calculated roll value.

The calibration status can be:

Good – Although another pass can be done, it may not improve the calibration.

Marginal – Additional passes are recommended to improve the calibration.

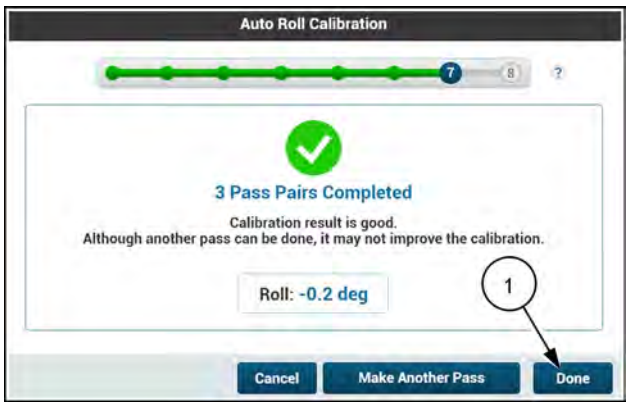
Not acceptable – Additional passes are needed to improve the accuracy.



RAPH22PLM0903BA 11

16. If additional passes are required, press the “Make Another Pass” button **(1)** and follow the on-screen instructions to complete additional passes.

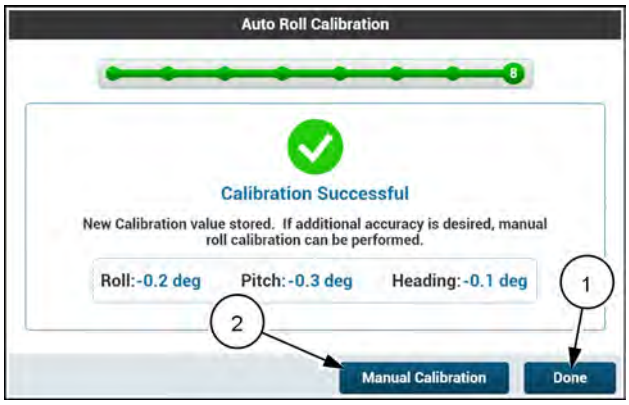
17. If the results of the calibration are acceptable, press the “Done” button **(1)**.



RAPH22PLM0904BA 12

The roll calibration procedure is complete, and the new calibration values are stored. Press the “Done” button **(1)**.

NOTE: *If additional accuracy is desired, press the “Manual Calibration” button* ***(2)*** *to access the manual roll calibration procedure.*



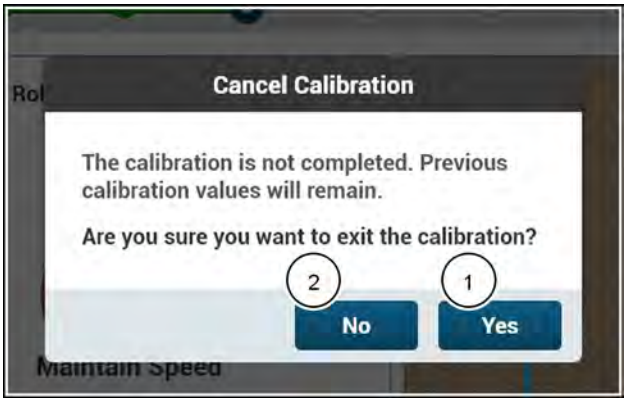
RAPH22PLM0905BA 13

Automated Roll Calibration cancellation

At any time you wish to cancel the calibration, press the “Cancel ” button on any of the calibration windows.

If you attempt to cancel the calibration, a warning popup displays.

- Press the “Yes” button **(1)** to proceed with the cancellation. The previous calibration values will remain.
- Press the “No” button **(2)** to return to the calibration step where you left off.



NHIL22PLM0330AA 14

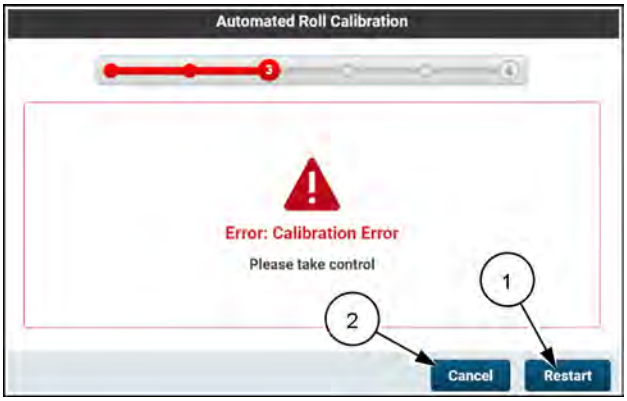
If you cancel the calibration, the calibration window will display a “Calibration Cancelled” message **(1)**. Upon cancellation, you must take control of the vehicle. Press the “Done” button **(2)** to exit the calibration window.

NHIL18PLM0057AA 15

Automated Roll Calibration errors

If at any time the Automated Roll Calibration fails, an audible alarm sounds and the warning screen will display with a specific error message.

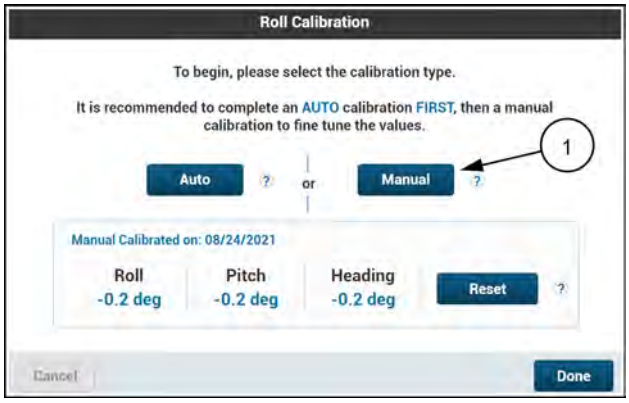
- Press the “Restart” button **(1)** to repeat the Automated Roll Calibration procedure. The calibration will return to Step 1.
- Press the “Cancel” button **(2)** to exit the calibration screen.



RAPH22PLM0906BA 16

Manual Roll Calibration

1. To access the Manual Roll Calibration, press the “Manual Roll Calibration” button **(1)**.

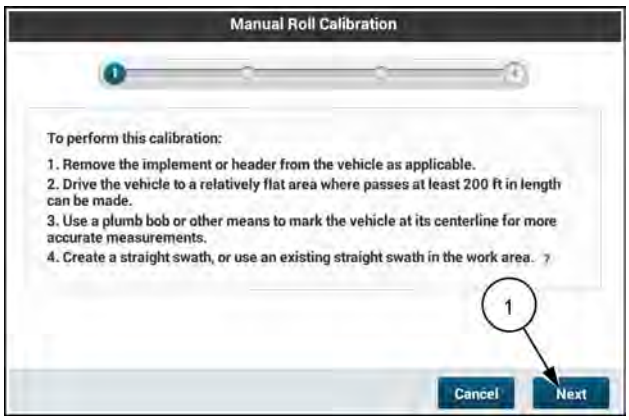


NHIL22PLM0334AA 17

NOTE: *Make sure that the Implement Offset, Header Center Offset, Trim, and Nudge windows are set to 0 (zero), if applicable, when you perform the Roll Calibration.*

Before you start the Manual Roll Calibration:

2. Remove the implement or header from the vehicle, as applicable.
3. Drive the vehicle to a relatively flat area, where passes of at least **61 m** (**200 ft**) can be made.
4. Use a plumb bob or other means to mark the vehicle at its centerline for more accurate measurements.
5. Create a straight swath, or use an existing straight swath in a chosen work area.



RAPH23PLM1238BA 18

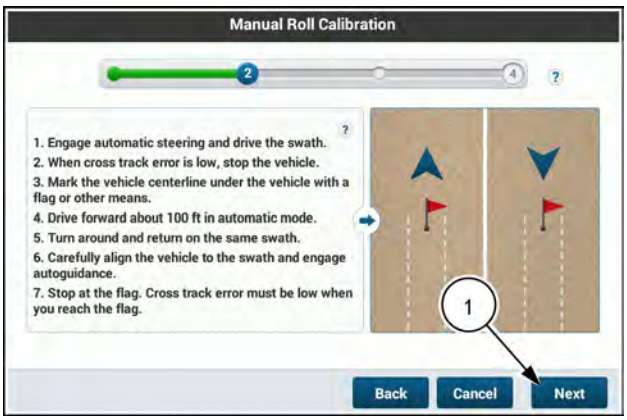
Press the “Next” button **(1)** to begin the Manual Roll Calibration.

NOTE: *If autoguidance is not available, you can still drive a swath manually by using the “swath finder” feature, but you must drive as accurately as possible down the swath for long enough to ensure the vehicle heading is aligned with the swath.*

Follow the instructions within the calibration window.

6. Engage automatic steering and drive along the swath.
7. When the cross track error is low, stop the vehicle.
8. Mark the vehicle centerline under the vehicle with a flag or other means.
9. Drive forward for about **30 m** (**98 ft**) in automatic mode.
10. Turn around and return on the same swath.
11. Carefully align the vehicle to the swath and engage autoguidance.
12. Stop at the flag. The cross track error must be low when you reach the flag.

NOTE: *If the cross track error is high when you reach the flag, turn around and drive further away from the flag. Approach the flag again in automatic steering. Increasing the distance allows more time to align to the swath.*



RAPH23PLM1239BA 19

Press the “Next” button **(1)** to proceed to the next calibration step.

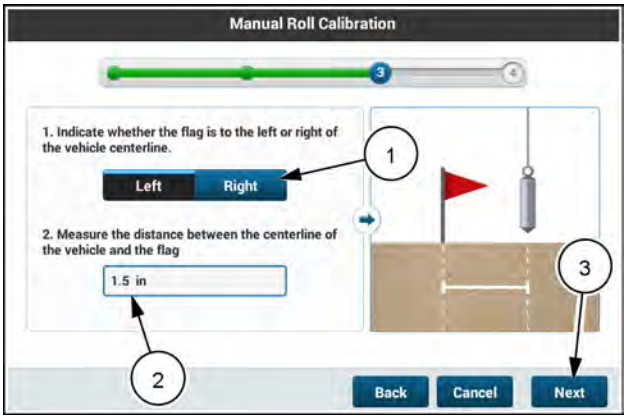
Measure the offset.

13. Indicate whether the flag is to the left-hand side or right-hand side of the vehicle centerline.

Use the left/right toggle buttons **(1)** to indicate the flag position. The figure on the screen will dynamically change to show the flag position as selected by the toggle buttons.

NOTE: *Directions are from the perspective of the operator, seated in the operator’s seat.*

14. Measure the distance between the centerline of the vehicle and the flag.
15. Enter the offset value in the input field **(2)**, and then press the “Next” button **(3)** to proceed to the next calibration step.

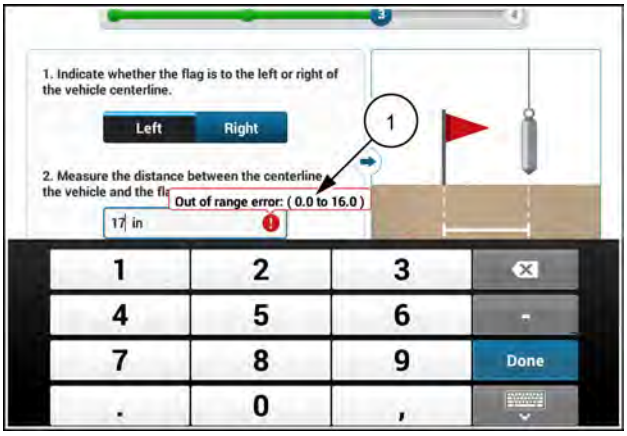


RAPH23PLM1240BA 20

If you enter an offset value that is greater than **40.6 cm** (**16 in**), then an out-of-range error message **(1)** will appear that alerts you of a potential problem with the GNSS signal. You cannot proceed past this step.

In this situation, the following items are a good practice:

- Drive the vehicle for several minutes to make sure the system fully initializes.
- Move away from buildings to an area with a clear sky. Repeat the calibration.
- Make sure you are using the exact center line of the vehicle when you mark the ground.



RAPH23PLM1242BA 21

If the calibration is successful, the calibration screen will display a “Calibration Successful” message. The roll angle shown is the total of all previous calibrations since the roll angle was reset. It is advisable to repeat the calibration process several times until the offset distance is small.

NOTE: *Unlike the automated roll calibration, the manual roll calibration updates only the roll value.*

Press the “Repeat Manual Calibration” button **(1)** to perform the manual roll calibration again.

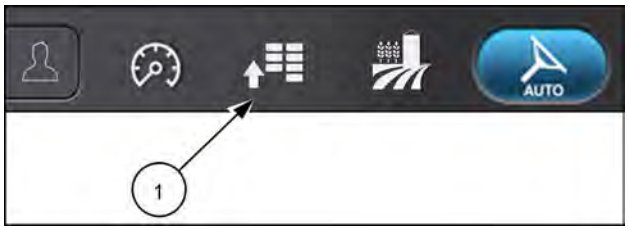
Press the “Done” button **(2)** to save the roll angle value and exit the Roll Calibration.

RAPH23PLM1241BA 22

Applicator setup

Applicator card

Press the button **(1)** on the top bar to open the “Menu” screen. Press the “Settings” tab, if necessary.

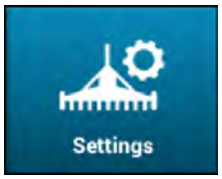


RAIL19PLM0121AA 1

Press the appropriate button to access the “Applicator” setup card.

RAPH21PLM1074AA 2

The “Applicator” setup card allows you to configure an operator-created non-ISOBUS applicator in the display.



The “Settings” screen allows you to select or manually create applicators in the display.

- See “Applicator settings” (**4-64**).

The “Measurements” screen allows you to configure the dimensions of your manually created applicator for autoguidance and coverage mapping operations.

- See “Applicator measurements” (**4-67**).

The “Application Control” screen allows you to:

- View application controller details. See “Setup your application controllers” (**5-170**).
- Set up virtual tanks. See “Virtual tanks” (**5-193**).
- Set up rate snapping.

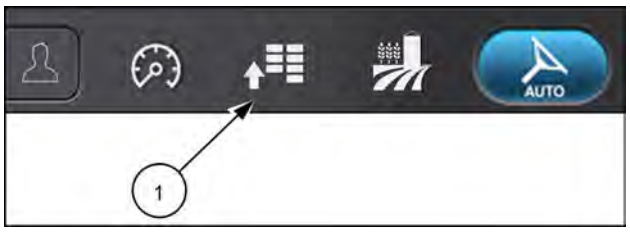
The “Product Delay” screen allows you to configure:

- Product start delay time
- Product stop delay time
- Advanced product delay for ISOBUS applicators

For more information, see “Adjust product delay” (**5-176**).

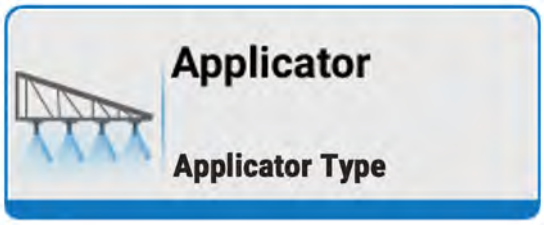
Applicator settings

Press the button **(1)** on the top bar to navigate to the “Menu” screen. Press the “Settings” tab, if necessary.



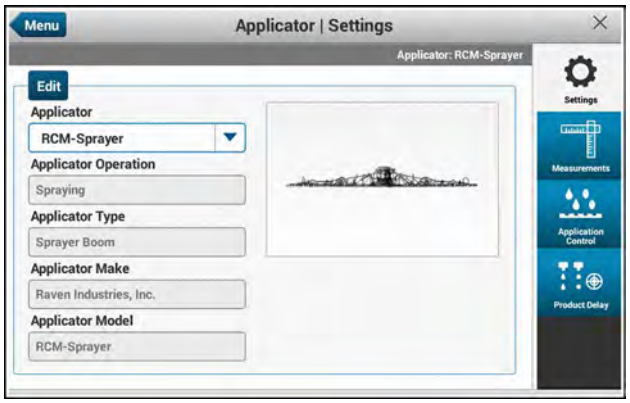
RAIL19PLM0121AA 1

Press the appropriate button to access the “Applicator” card.



RAPH21PLM1074AA 2

The “Settings” page displays.

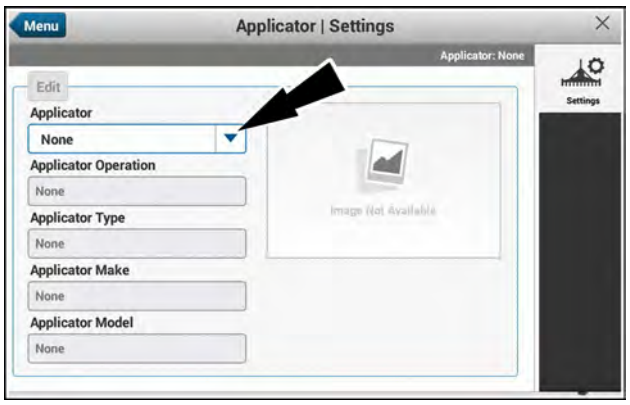


RAPH23PLM0318AA 3

The system detects ISOBUS applicator controllers. ISOBUS applicator controllers automatically appear in the “Applicator” field. You can also configure an applicator.

When no applicator is selected or detected, the selections for your applicator are blank.

The populated “Applicator/Settings” screen will change, based on the selected applicator. For example, you can configure one applicator for when the booms are fully extended. You configure another applicator for when you have the outer wings folded and you use only the inner sections. This alleviates the need to manually switch sections ON or OFF every time you change your applicator configuration:



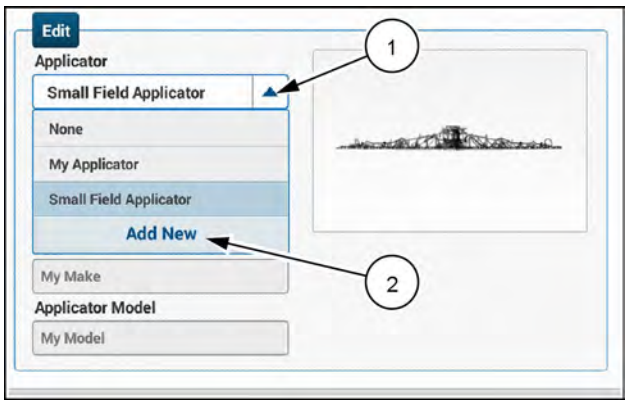
RAPH21PLM1076AA 4

- Use the “Applicator” drop-down menu to select the applicator. If the applicator is not already detected or created in the display, you must define the applicator name, operation, type, make, and model, as well as the appropriate applicator measurements for accurate mapping and guidance.

  NOTE: *You can change the selected applicator on this screen at any time, unless autoguidance is in the engaged state or the applicator is in the “work” state.*

You can manually select an applicator from the “Applicator” drop-down menu **(1)**.

If the applicator you wish to use is not yet setup, press the “Add New” button **(2)** to create the applicator.



RAPH23PLM0319AA 5

Define the applicator information in the “Add Applicator” pop-up window. If desired, change the applicator as needed for your farming operation.

NOTE: *The “Save” button will remain grayed out until you configure an applicator operation.*

Press the “Save” button to save the new applicator and return to the “Applicator/Settings” screen.

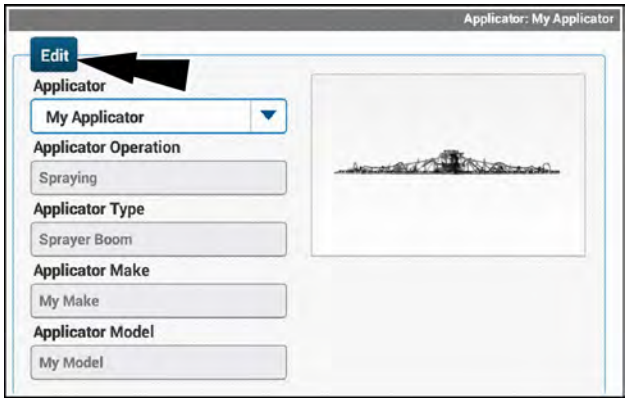
RAPH23PLM1206BA 6

On the “Applicator/Settings” screen, the remaining fields are read only:

- “Applicator Operation”
- “Applicator Type”
- “Applicator Make”
- “Applicator Model”

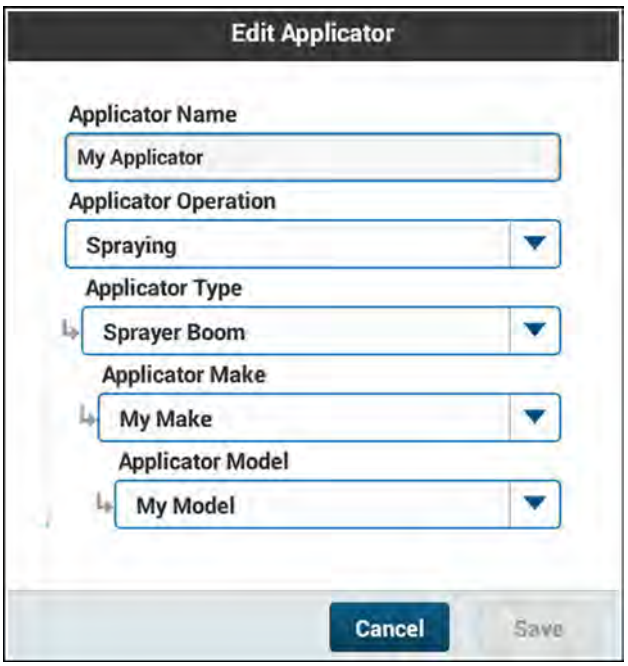
To edit the applicator information, press the “Edit” button.

NOTE: *The “Edit” button is grayed out if the current work status is "in work.”*



RAPH23PLM0320AA 7

Adjust the configuration in the “Edit Applicator” window as needed for your operation.



RAPH23PLM1207BA 8

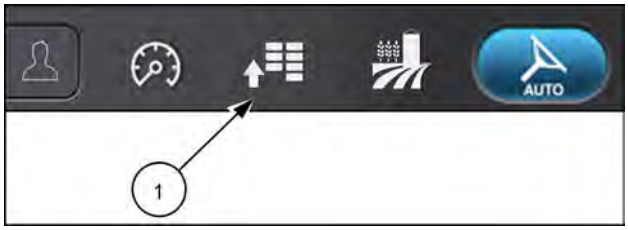
Applicator measurements

The “Measurements” screen configures the software for purposes of precision farming functions such as producing map layers or establishing swath widths.

Each applicator configuration has some measurements that are unique to the configuration. The “Applicator/Measurements” screen provides spaces for entering the measurements for the specific applicator configuration.

Open the “Measurements” screen

Press the button **(1)** on the top bar to open the “Menu” screen. Press the “Settings” tab, if necessary.

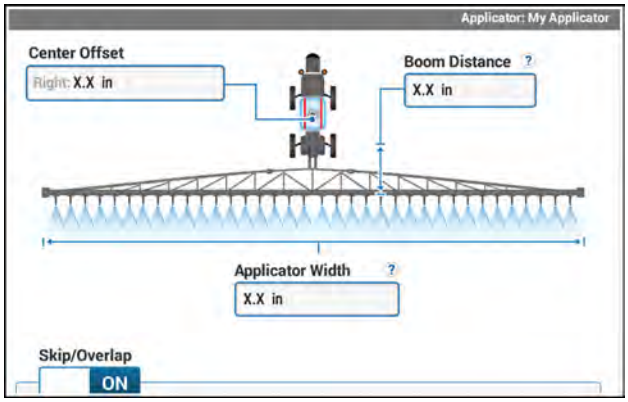


RAIL19PLM0121AA 1

Press the appropriate button to access the “Applicator” setup card.

RAPH21PLM1074AA 2

Press the “Measurements” button. The “Applicator | Measurements” screen opens.

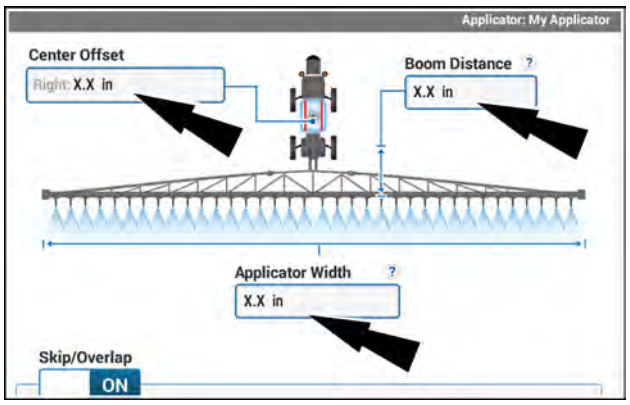


RAPH23PLM0322AA 3

If the applicator is detected by the system (ISOBUS), the measurements are inherited from the **Raven™** ISOBUS system, and may appear locked.

The available measurements will differ based on the applicator configuration you are using.

Press value box and use the keypad to define the measurements for the applicator configuration.



RAPH23PLM0322AA 4

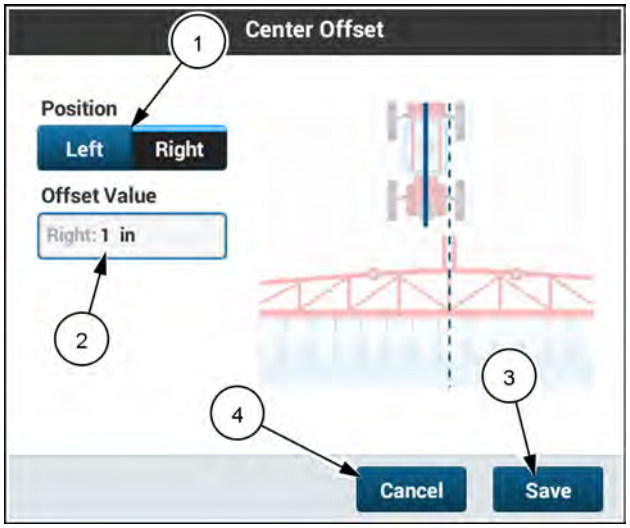
When you press the “Center Offset” field, a “Center Offset” window appears.

Press the “Left” or “Right” toggle **(1)** to define if the offset is left or right of the vehicle center line. In this example the right offset is shown.

Press the “Offset Value” field **(2)** to bring up a keypad. Enter the offset value.

Press the “Save” button **(3)** to save the offset setting.

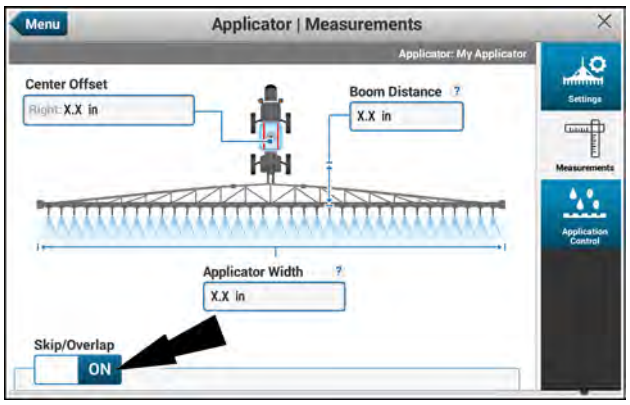
Press the “Cancel” button **(4)** to close the “Center Offset” window without changing the center offset value.



RAPH23PLM1243BA 5

Skips and overlaps

Scroll down on the “Measurements” screen to access the “Skip/Overlap” setting. Press the button to enable skips and overlaps.



RAPH21PLM1090AA 6

Scroll down to access the skip/overlap settings.

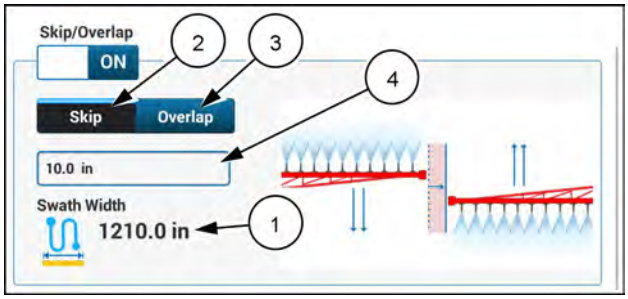
The swath width **(1)** is read-only and is based upon the selected applicator width and the skip/overlap value. The swath width is calculated as the applicator width plus the skip, or the applicator width minus the overlap.

Press the “Skip” button **(2)** to configure a gap between rows.

Press the “Overlap” button **(3)** to configure overlap between rows.

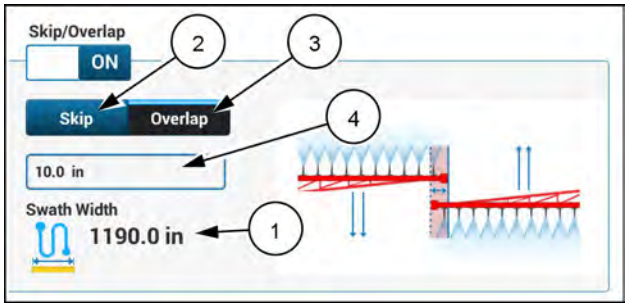
Press the value box **(4)** to assign a skip or overlap value.

Configuring a skip



RAPH23PLM0326AA 7

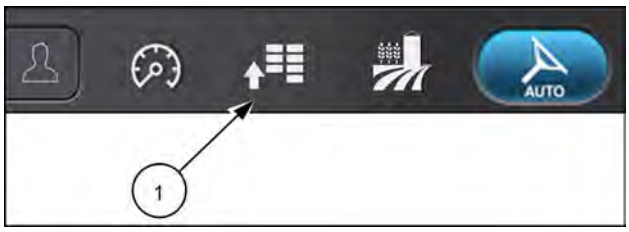
Configuring an overlap



RAPH23PLM0325AA 8

Sprayer/Applicator configuration card

Press the button **(1)** on the top bar to navigate to the “Menu” screen.



RAIL19PLM0121AA 1

Press the appropriate button to access the "Sprayer/Applicator Configuration" card.

RAPH21PLM1098AA 2

The only available screen on the “Sprayer/Applicator Configuration” card is the “Sources” screen.

The “Sources” screen allows you to:

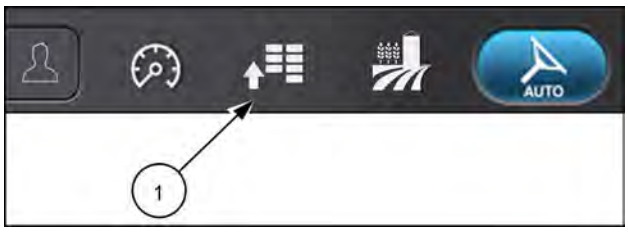
- Manage your vehicle implement configurations with settings that may be particular to certain farming operations. See “Sprayer/Applicator configurations” (**4-71**).
- Select your work switch source, so that the system knows when the vehicle is in the “work” state.
- Set your system speed source priority.

Sprayer/applicator configurations

Before you select or modify your sprayer/applicator configuration, make sure that your applicator is setup in the display. See “Applicator settings” (**4-64**).

To access your sprayer/applicator configurations:

Press the button **(1)** on the top bar to navigate to the “Menu” screen.



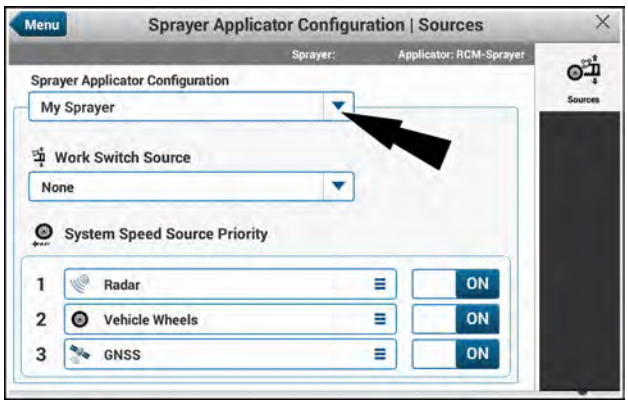
RAIL19PLM0121AA 1

Press the appropriate button to access the "Sprayer/Applicator Configuration" card.

RAPH21PLM1098AA 2

The display will automatically create a sprayer/applicator configuration that consists of your sprayer and the applicator that is selected within the “Applicator” card.

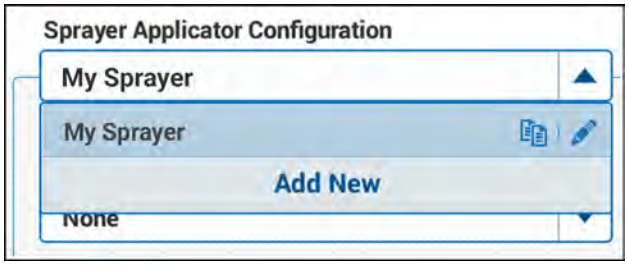
To edit, delete, or create a new sprayer/applicator configuration, press the “Sprayer Applicator Configuration” drop down menu.



RAPH21PLM1095AA 3

The following actions are available:

Icon	Function
1	Delete configuration
	Create an exact copy of the configuration
	Edit configuration
“Add New”	Create configuration



RAPH21PLM1096AA 4

NOTE: *[1] The delete function is only available if there are more than one sprayer/applicator configurations available. You also cannot delete the current selected sprayer/applicator configuration.*

"Sources" screen

Before you select or modify your applicator switch source or system speed source priority, make sure that your applicator is set up in the display. See “Applicator settings” (**4-64**).

The precision farming system can be “in work” and logging data or “out of work” and not logging data. The current state of the work switch is depicted by an icon on the top bar. For more information on the work switch status icon, see “Top bar” (**3-6**).

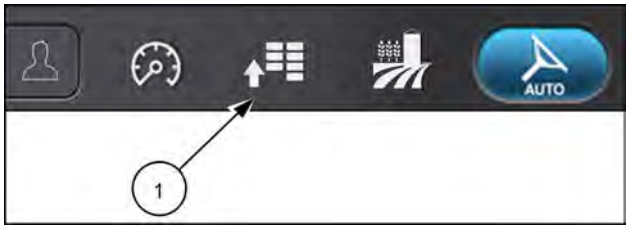
The work state is determined by:

- The status of the work switch source
- The task status (running or paused)
- Vehicle ground speed (zero speed or moving)

The work switch source is configured on the “Sources” screen of the “Sprayer/Applicator Configuration” card.

To access the “Sources” screen:

Press the “Menu” button **(1)** on the top bar to navigate to the “Menu” screen.



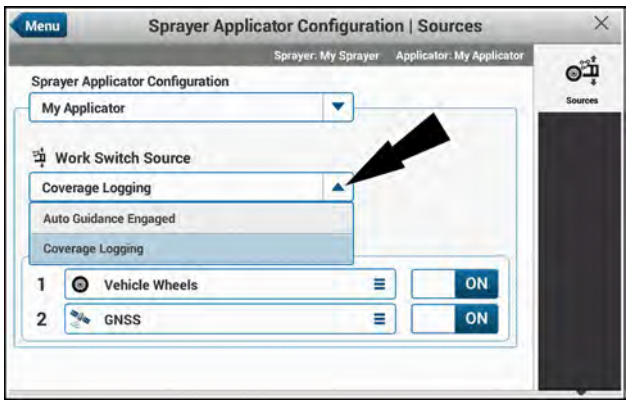
RAIL19PLM0121AA 1

Press the appropriate button to access the "Sprayer/Applicator Configuration" card.

RAPH21PLM1098AA 2

The “Sources” screen automatically displays.

Press the “Work Switch Source” drop-down menu to change the action that will place your applicator into “work.”

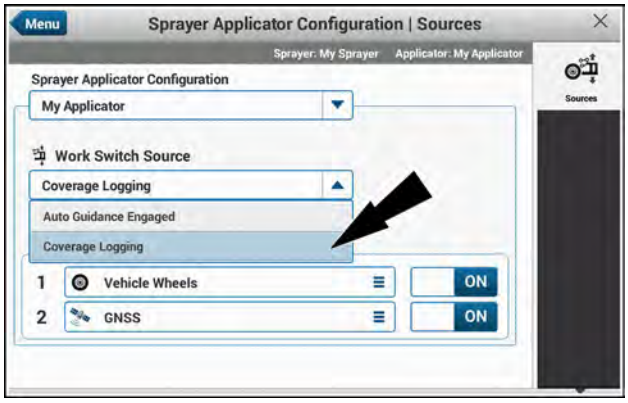


NHPH23PLM1375AA 3

“Work Switch Source” setting

Select the desired work switch source option. The following work switches may be available:

- Autoguidance engage switch – Work will begin when you engage guidance.
- Coverage logging switch – Work will begin when you turn on the coverage logging window from a run screen.



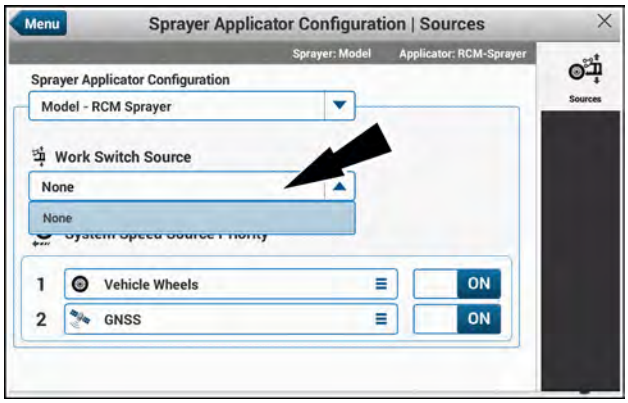
NHPH23PLM1375AA 4

ISOBUS applicators with variable rate control or section control

For applicators with rate and section control, the system will be “in work” and logging data when the applicator is applying a rate for application control.

For applicators with section control only, the system will be “in work” when the vehicle is moving. If the vehicle ground speed is zero, no data is logged.

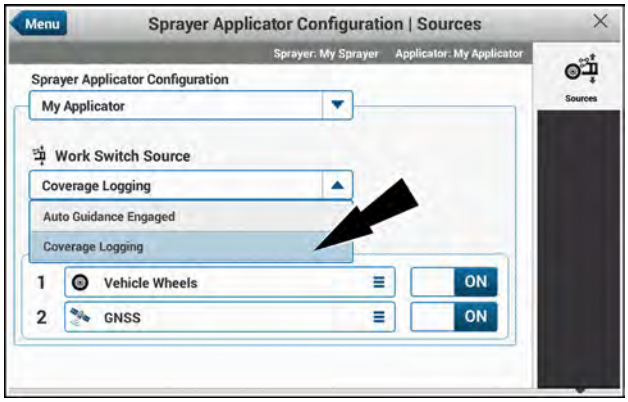
Applicators with variable rate control or section control do not have work switch source. The drop-down menu only provides the option of “None.”



NHPH23PLM1376AA 5

Operator-created applicators

Applicators that are manually-created in the display can utilize either of the available work switch sources from the drop-down menu, including “Coverage Logging”. With the Coverage Logging” work switch source, you can engage the work switch with the “Coverage Logging” window on a run screen.



NHPH23PLM1375AA 6

“System Speed Source Priority” setting

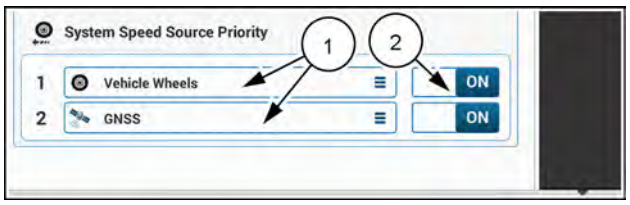
The system speed is the speed that is displayed in the ground speed window on a run screen or left-hand area. The system speed is the speed used for all area, distance, and rate calculations. The system speed is based on the priority defined within the “Sources” screen; the next available source will be used for system speed if the speed signal is not available.

Your desired system speed source will depend on your location and type of farming operation. For example, you may want to move the “GPS” speed source to a lower position on the priority list if you operate in an area with poor GNSS reception.

To increase the priority of one of the speed sources, press and drag the speed source **(1)** up above the other speed sources in the list.

To decrease the priority of one of the speed sources, press and drag the speed source **(1)** down below the other speed sources in the list.

To enable or disable the speed source, press the “ON/OFF” button **(2)**.

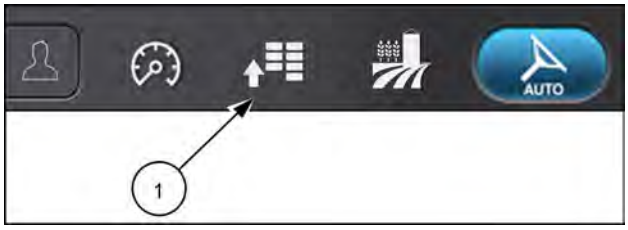


NHPH23PLM1377AA 7

"Work Condition" card

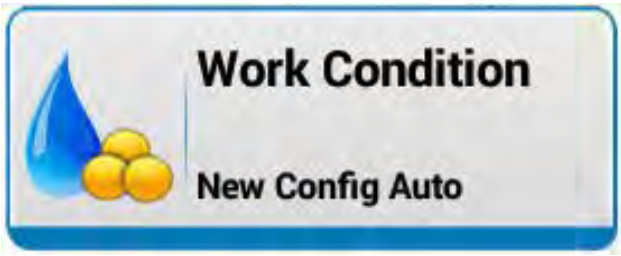
The “Work Condition” card allows you to save configurations for your operation that may change based on product characteristics, or which type of product you will use in a given applicator configuration.

To access the “Work Condition” card, press the button **(1)** on the top bar to navigate to the “Menu” screen. Press the “Settings” tab, if necessary.



RAIL19PLM0121AA 1

Press the “Work Condition” card.



NHIL20PLM0384AA 2

The active work condition can be changed or a new work condition created from the “Implement Control” screen. Additional functions are listed below.

The “Implement Control” screen allows you to:

- Select or create a new work condition.
- Select the product to be used in a given work condition.

The “Overlap Settings” screen allows you to set up your boundary and overlap settings for section control.

- See ”Set boundary and overlap controls“ (**4-76**).

The active work condition can be changed or a new work condition created from the “Implement Control” screen. Additional functions are listed below.

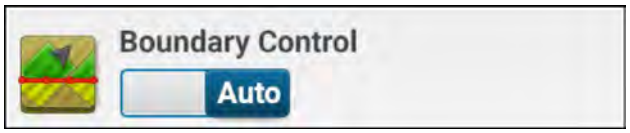
Set boundary and overlap controls

Turn automatic boundary and overlap controls on/off

NOTE: *If needed, use the "Layout" screens to add the "Boundary Control" window to a run screen.*

Use the "Boundary Control" window added to a run screen to turn automatic boundary control on and off.

In the "Boundary Control" window, press the "OFF" button to turn on automatic boundary control, or press the "Auto" button to turn off automatic overlap control.

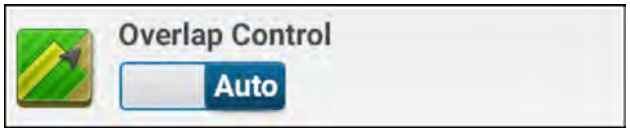


NHIL20PLM0073AA 1

NOTE: *If needed, use the "Layout" screens to add the "Overlap Control" window to a run screen.*

Use the "Overlap Control" window added to a run screen to turn automatic overlap control on and off.

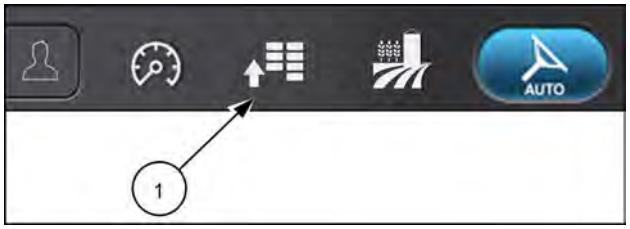
In the "Overlap Control" window, press the "OFF" button to turn on automatic overlap control, or press the "Auto" button to turn off automatic overlap control.



NHIL20PLM0074AA 2

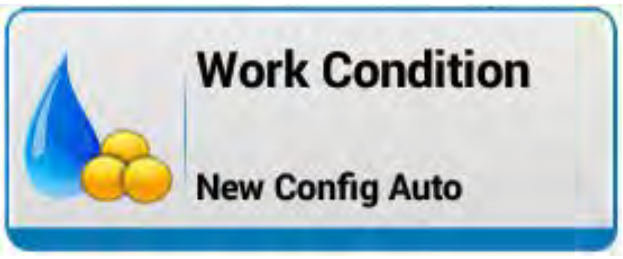
Automatic boundary and overlap control setup options

To access the setup options for boundary and overlap control, press the button **(1)** on the top bar to navigate to the "Menu" screen. Press the "Settings" tab, if necessary.



RAIL19PLM0121AA 3

Press the "Work Condition" card.

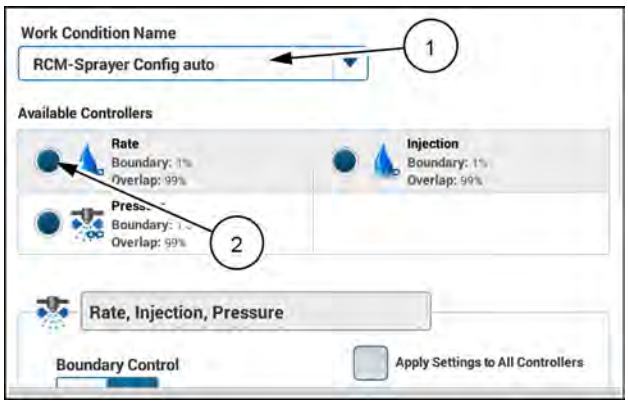


NHIL20PLM0384AA 4

Press the "Overlap Settings" button in the "Work Condition" card. The "Product Card / Overlap Settings" window appears.

The boundary and overlap settings are stored in the work condition configuration **(1)**. Create a new work condition if you intend to make changes on this screen but wish to preserve the former settings.

The available application controllers are shown. Press the radio button **(2)** next to the controller to configure the boundary and overlap settings for that controller.

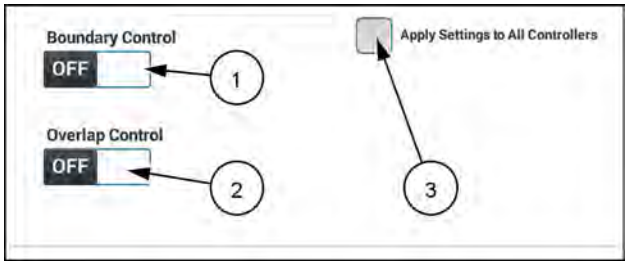


RAPH23PLM0328AA 5

Press the button **(1)** to enable automatic boundary control.

Press the button **(2)** to enable automatic overlap control.

Press the “Apply Setting to All Controllers” check box **(3)** to use these boundary settings in all of the controllers in the implement.

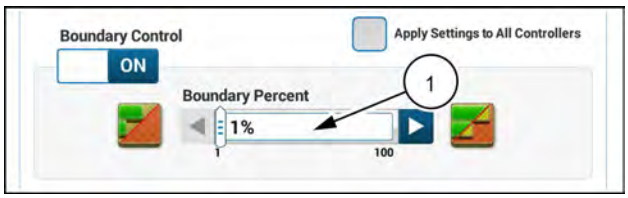


RAPH23PLM0329AA 6

Boundary control setup

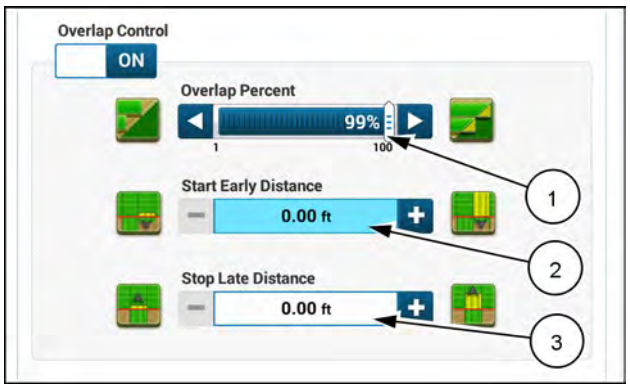
Boundary control uses field boundary data that is imported or recorded on the display to turn sections ON when you enter the field boundary or OFF when you exit the field boundary.

Use the slider **(1)** to set the percentage of each individual section width that crosses the boundary. When the defined percentage of the individual section is outside of the boundary, that section will turn off. Use the left and right arrows to fine tune the adjustment, if necessary. If you wish to define a value, press and hold the value field and use the keypad to input the value.



RAPH23PLM0330AA 7

Overlap control setup



NHIL20PLM1196BA 8

Overlap control uses the coverage map for the field to determine when vehicle sections are crossing an area of the field where product application has already occurred. The appropriate implement section or sections are turned OFF as the implement enters an applied area and turned ON again if the implement travels into an area where no product application has occurred.

Use the slider **(1)** to adjust the “Overlap Percent” setting. This configures how much overlap must be present before a section or sections are turned OFF.

Before adjusting the start early or stop late distance, make sure that:

- The location of the GNSS receiver is correct on the “Measurements” screen (**4-52**) of the GNSS setup card.
- The implement measurements, particularly the bar distance, is correct on the “Measurements” screen (**4-67**) of the implement setup card.

  NOTE: *Do not adjust the start early or stop late distance until you confirm that the receiver and implement measurements are correct.*

Use the “Start Early Distance” setting **(2)** to change the default setting for when the product drives are started relative to the applied field area. In general, this is the time it takes for a product to move from the meter to the ground.

Long press the “Start Early Distance” field to open a keypad and enter a value. Use the left and right arrows to fine tune the adjustment, if necessary. If the product drives are starting before the implement leaves the field area where application has already occurred, decrease the value. If they are starting after they leave an applied area, increase the value.

Use the “Stop Late Distance” setting **(3)** to change the default setting for when the product drives are stopped when entering an applied area. Long press the “Stop Late Distance” field to open a keypad and enter a value. Use the left and right arrows to fine tune the adjustment, if necessary. If the product drives are stopping before they enter the field area where product application has already occurred, increase the value. If they stop after they enter an applied area, decrease the value.

ISOBUS setup

Introduction

Universal Terminal (UT)

The Universal Terminal (UT) serves as the user interface for **ISO 11783** (ISOBUS) applicators, such as those controlled by **Raven™** nodes.

NOTE: *See http://www.aef-online.org/ for more information about the* ***ISO 11783*** *standard.*

The UT runs in the AFS Pro 1200 display along with any other installed applications – e.g., the vehicle software, autoguidance, task controller, etc. This means that an operator only requires a single display for vehicle reporting, vehicle control, guidance, and **ISO 11783** (ISOBUS) functionality.

When you use the “Universal Terminal” application as the UT for an ISOBUS applicator or tool, the **Pro 1200** display receives its control and reporting functions from the ISOBUS applicator via the **Raven™** application.

The **Raven™** application in the UT supports mapping of applicator nodes to vehicle controls, such as cab switches, levers, etc., through the “Auxiliary Controls” screen.

The applicator uploads its objects, windows, and screens to the display.

Setup requirements for the “Universal Terminal” application are minimal in most cases:

- You must enable the “Universal Terminal” application and provide basic information about your configuration. See “Universal Terminal (UT) and Task Controller (TC) settings” (**4-84**) for the enabling procedure.
- Some software applications that use the vehicle’s controls – cab switches, levers, etc. – require mapping the functions of the applicator or working tool to the cab controls. See “Assign auxiliary inputs” (**4-90**) for additional information.

Task Controller (TC)

ISO 11783 tasks that are used by the task controller can be understood as assignments or work orders for **ISO 11783** applicators. The details of the specific work to be accomplished originate primarily in the desktop software rather than the display. Data about the work being performed is logged to the **ISO 11783** task for analysis in the desktop software.

NOTE: *It is possible to create and define parameters of an* ***ISO 11783*** *task within the task controller on this display, but a much greater degree of detail can be accomplished with the desktop software. Furthermore, you cannot create prescriptions directly on the display.*

NOTE: *The task controller cannot edit any data that is provided by the desktop software. It can, however, add data to an existing* ***ISO 11783*** *task before you start or resume the* ***ISO 11783*** *task.*

Use the universal terminal (UT) screens to change settings for the applicator or to monitor work while using an ISOBUS task. The **ISO 11783** applicator provides the screens.

The task controller allows you to:

- Use task data in the ISO Extensible Markup Language (ISO XML) format to communicate job information (e.g. grower/farm/field, prescriptions, field boundaries) through the display to an **ISO 11783**-compliant (ISOBUS) applicator.
- Turn section nozzles OFF automatically based on field boundaries and previously worked areas
- Log ISOBUS task data from the applicator for export to the memory stick or the **AFS Connect™** portal.

The task data can be created from either your preferred Farm Management Information Software (FMIS or "desktop software") or the **AFS Connect™** Farm App. The data can then be transferred to the display via a USB memory stick, or you can use the Farm App to send the file set to the display with telematics and file transfer.

To download the desktop software, navigate to https://www.caseih.com/ and click on the “Data Management Software” link under the “Products” > “Advanced Farming Systems® (AFS)” menu.

To access the **AFS Connect™** Farm App, first login to your **AFS Connect™** account at https://my.caseih.com, and then click the ”AFS Connect” link from the single sign-on application drop-down menu.

The task controller currently supports three levels of functionality:

Task Controller Basic (TC-BAS): for summary data logging of work performed by the applicator (i.e. totals)

TC-BAS functionality is included from the factory as part of the Advanced Precision Farming & Guidance (PF&G) activation.

Task Controller Geo (TC-GEO): for planning and logging location-based data (i.e. variable rate control using prescription maps and logging of “as applied” data)

TC-GEO functionality for variable rate control on up to two products is included from the factory as part of the Advanced Precision Farming & Guidance (PF&G) activation. A multi product control activation is available to control up to six products.

Task Controller Section Control (TC-SC): for operating with section control based on overlap and field boundaries

TC-SC functionality is included from the factory for up to 128 sections as part of the Advanced Precision Farming & Guidance (PF&G) activation.

NOTE: *The task controller feature on some ISOBUS applicators may need to be activated with an activation code. Contact your CASE IH dealer if you need further information on this topic.*

Although the functionality is supported on the display, the ISOBUS applicator will need to support the same functionality to be fully compatible. To confirm which functionality is supported on the applicator, visit https://www.aef-isobus-database.org.

ISOBUS classes

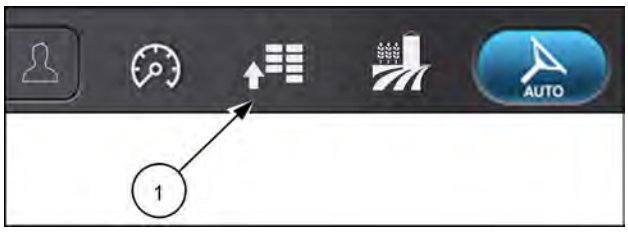
An ISOBUS system, compliant with the **ISO 11783** standard, is the combination of an ISOBUS sprayer and applicator. There are three levels of ISOBUS systems available: Class 1, Class 2 and Class 3.

The ISOBUS applicator uses sprayer information transmitted over the ISOBUS Controller Area Network (CAN) bus.

This display supports all ISOBUS classes.

"ISOBUS" card

Press the button **(1)** on the top bar to open the “Menu” screen. Press the “Settings” tab, if necessary.

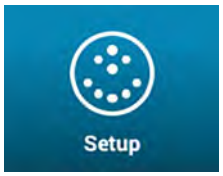


RAIL19PLM0121AA 1

Press the appropriate button to access the “ISOBUS” setup card.

NHIL19PLM0611AA 2

The "ISOBUS” setup card allows you to manage general Universal Terminal (UT) settings and implement settings.



The “Settings” screen contains setup information for:

- Universal Terminal (UT)
- Task Controller (TC)

The “Auxiliary Control” screen allow you to:

- Assign implement commands to a compatible auxiliary input device.

Universal Terminal windows

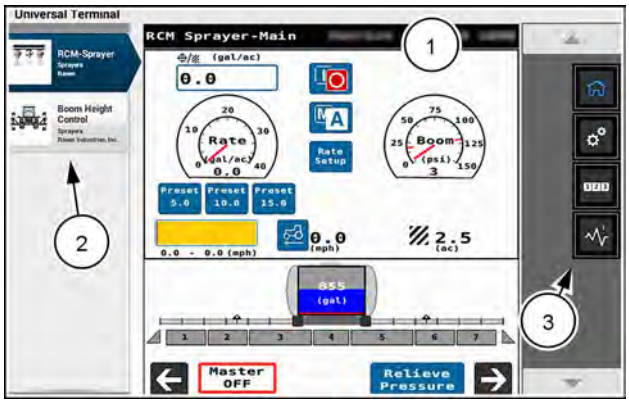
You can add universal terminal windows to a run screen or the Left-Hand Area (LHA). The universal terminal windows are available in the “Layout > Implement/Boom” menu.

ISO 11783-compliant applicators such as those controlled by **Raven™** nodes provide the information that populates the universal terminal.

Full-screen universal terminal

The full-screen universal terminal is a 2x6 window that contains he following items:

- ISOBUS mask **(1)**, provided by the applicator
- The listed object pools **(2)** that have been previously detected by the software and are currently active – Press the object pool to change the selected node.
- The soft keys **(3)** to allow for control of the selected node.
- Interactive controls and readouts in the ISOBUS mask.



RAPH22PLM1687AA 1

If the system does not detect an **ISO 11783**-compliant applicator, a screen stating, “Implement not detected” appears.

RAIL18PLM1585AA 2

Half-screen (2x3) universal terminal

The half-screen 2x3 universal terminal provides the same objects as the full-screen universal terminal.

RAPH22PLM1688AA 3

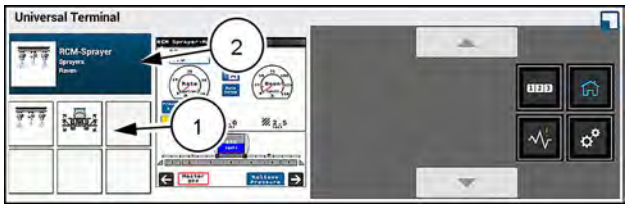
Half-screen (1x6) universal terminal

The half-screen 1x6 universal terminal contains the same objects as the half-screen 2x6 universal terminal described above, but in a vertical arrangement.

RAPH22PLM0926BA 4

Selecting the active applicator in half-screen universal terminal windows

In the half-screen (2x3 or 1x6) universal terminal, the object pool list appears as icons. Up to six icons are shown at a time. Press an icon **(1)** to select the corresponding object pool.



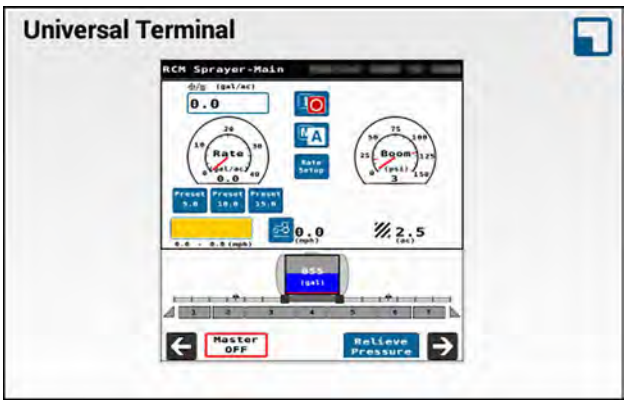
RAPH22PLM1688AA 5

If more than six object pools are available, not all icons can be shown. Additional object pools can be selected by pressing the current object pool button **(2)**. The “Object Pool List” window appears. Select the desired object pool from the object pool list.

Quarter-screen (1x3) universal terminal

The quarter-screen 1x3 universal terminal contains the selected ISOBUS mask.

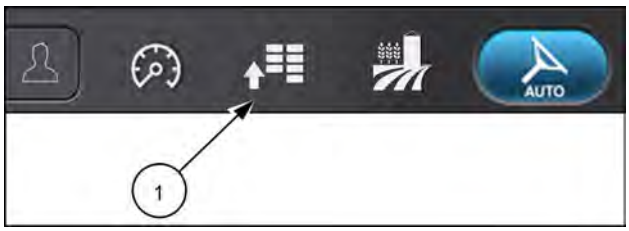
You can place the 1x3 universal terminal window in the Left-Hand Area (LHA) of the display.



RAPH22PLM1690AA 6

Universal Terminal (UT) and Task Controller (TC) settings

Press the button **(1)** on the top bar to open the “Menu” screen. Press the “Settings” tab, if necessary.



RAIL19PLM0121AA 1

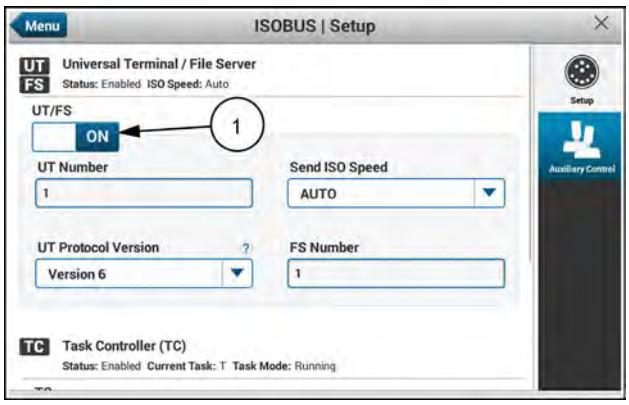
Press the appropriate button to access the “ISOBUS” setup card. The “ISOBUS Setup” screen appears.

NHIL19PLM0611AA 2

Enable the universal terminal

Press the “UT/FS” button **(1)** to enable the universal terminal. By default, a full-screen universal terminal is available on run screen four.

NOTE: *If the universal terminal is OFF, the settings become gray and are disabled.*



RAPH23PLM0379AA 3

UT Number

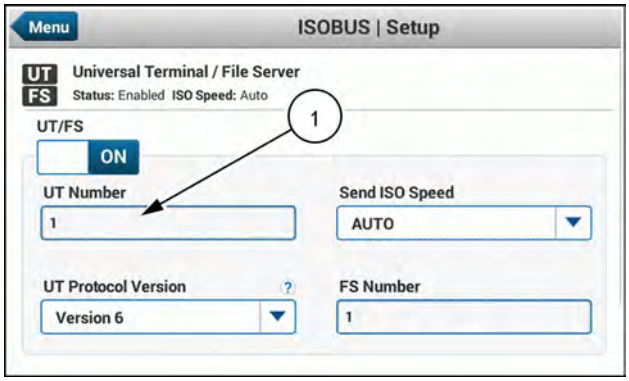
Use the “UT Number” field **(1)** to establish whether more than one terminal is in use. Because the **ISO 11783** (ISOBUS) standard allows more than one terminal to operate simultaneously, you must identify each “Universal Terminal” with a unique “UT Number.” On some terminals, the “UT Number” may be referred to as the “VT Number” or “Virtual Terminal Number.”

Leave the “UT Number” setting at “1” if either of the following conditions apply:

- You are operating with the “Universal Terminal” application as your only terminal.
- You wish to map the ISOBUS implement functions to controls on an ISOBUS auxiliary input device.

NOTE: *Auxiliary control is only available on universal terminal number “1”. If you select a number other than “1”, the “Auxiliary Control” tab disappears from the “ISOBUS Setup” screen.*

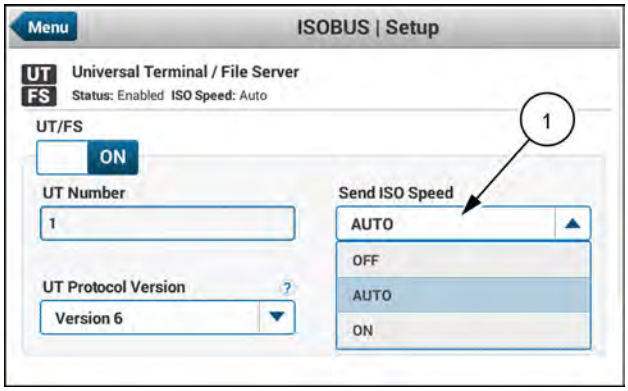
NOTE: *A warning will be displayed if multiple universal terminals or virtual terminals with the same “UT Number” are detected.*



RAPH23PLM0381AA 4

Send ISO Speed menu

The “Send ISO Speed” window **(1)** allows you to select the method used, if any, to send ground speed information to the ISOBUS implement over the ISOBUS Controller Area Network (CAN) bus. The display translates the speed information from a radar device or receiver and sends the messages to the implement via the ISOBUS CAN bus in an ISO-compliant format.



RAPH23PLM0380AA 5

Press the “Send ISO Speed” drop-down menu. The “Send ISO Speed” menu opens.

- “AUTO” – If the system detects speed messages on the ISOBUS, it does not broadcast speed messages of its own on the ISOBUS.

  NOTE: *CASE IH recommends leaving the “Send ISO Speed” setting to “AUTO.”*

- “OFF” – The system does not broadcast speed messages on the ISOBUS.
- “ON” – The system broadcasts ground speed and wheel speed messages on the ISOBUS, regardless of the presence of speed messages on the ISOBUS.

  NOTE: *If you send speed messages to the implement on the ISOBUS CAN bus, you must also configure the implement within the universal terminal to accept the speed information.*

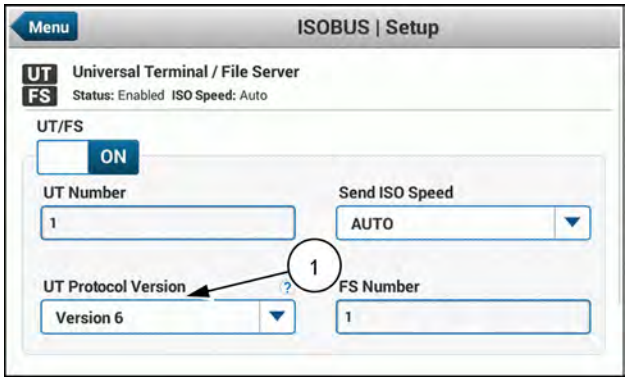
Speed on the ISOBUS network is ground speed. The ground speed can be either GNSS or radar speed, depending upon availability and the user preference established in the “Vehicle/Implement Configuration” screen.

The system uses wheel speed when it does not detect GNSS or radar speed.

UT Protocol Version

Version 6 is the recommended UT protocol version **(1)**. This can resolve issues when connecting implements that do not fully support the latest version. Changing the UT protocol version is an advanced setting that you should only do if no other solution is available.

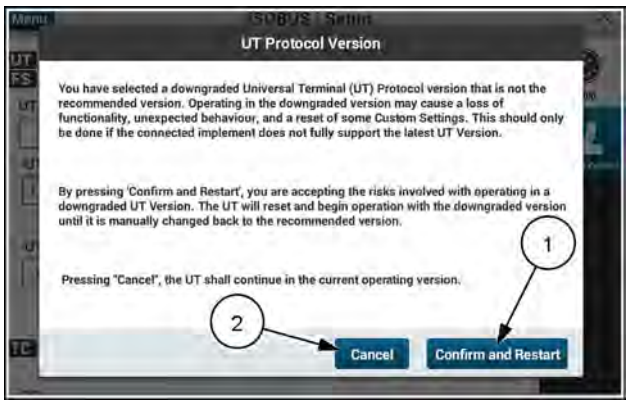
Version 3 is the other listed version.



RAPH23PLM0381AA 6

If you select version 3, a “UT Protocol Version” information popup appears.

The popup states, “You have selected a downgraded Universal Terminal (UT) Protocol version that is not the recommended version. Operating in the downgraded version may cause a loss of functionality, unexpected behavior, and a reset of some custom settings. This should only be done if the connected implement does not fully support the latest UT version.
By pressing “Confirm and Restart,” you are accepting the risks involved with operating in a downgraded UT version. The UT will reset and begin operation with the downgraded version until it is manually changed back to the recommended version.
By Pressing “Cancel,” the UT shall continue to operate in the current operating version.”



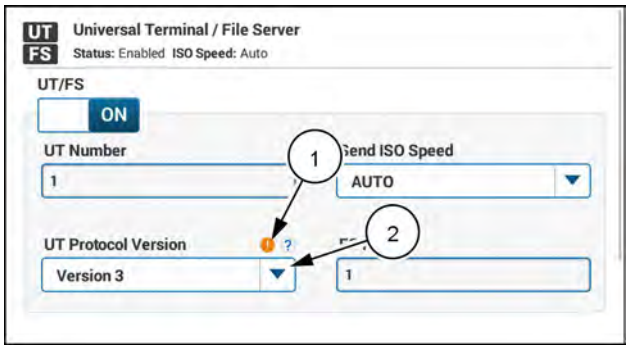
RAPH23PLM0382AA 7

Press the “Confirm and Restart" button **(1)** if you wish to downgrade the UT protocol version.

Press the “Cancel” button **(2)** to keep the currently selected UT protocol version.

A warning indicator **(1)** appears in the “UT Protocol Version” area if you select version 3.

Press the “UT Protocol Version” drop-down menu **(2)** if you wish to change the protocol version to version 6.



RAPH23PLM0383AA 8

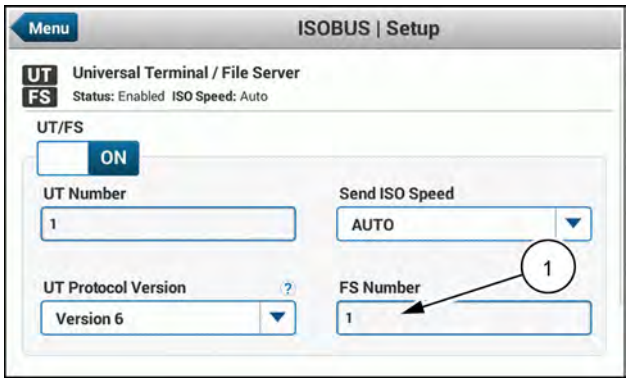
FS Number

NOTE: *Implement information is stored and managed in a file server. The content and format of a file is controlled by an implement Electronic Control Unit (ECU). You can capture implement information in the Random Access Memory (RAM) of the display into the Non-Volatile Memory (NVM) and also into the USB memory device. See “File Management screen”* ***6-27*** *for information about file server management. CASE IH recommends only managing your file server information if instructed by your CASE IH dealer.*

The File Server (FS) setting designates the display where the stored implement information resides in units with dual displays.

NOTE: *You must leave this setting at “1” if there is only one display using the UT application.*

Press the “FS Number” field if you wish to designate another display where the object pool files will reside.



RAPH23PLM0381AA 9

Enable the task controller

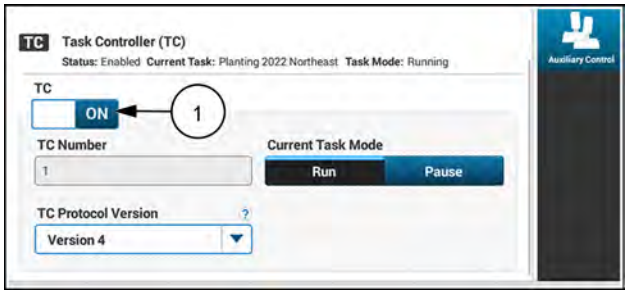
The task controller software in this display is integrated into the precision farming applications. There is no requirement to establish separate a grower, farm, and field when operating with the task controller.

You must activate the task controller in your display before you can use the features of this application. Contact your CASE IH dealer for activation codes for your display.

In the “ISOBUS Setup” window, scroll down to reveal the entire “Task Controller (TC)” section.

If disabled, press the “TC” button **(1)** to enable the task controller.

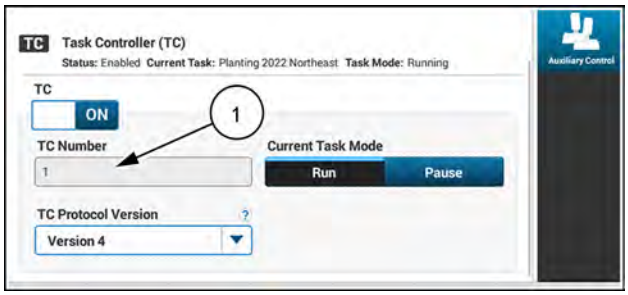
If you press the “TC” button when the task controller is enabled, the “TC” button moves to the OFF position and becomes gray. The remaining task controller settings become gray and are disabled.



RAPH22PLM0076AA 10

“TC Number”

The “TC Number” setting **(1)** is set to “1” and is read only. If more than one task controller exists on the ISOBUS, you must turn all but one off.



RAPH22PLM0076AA 11

Configure the task mode

The “Current Task Mode” buttons provide the option to pause or resume the currently running task. When the task controller is enabled, the current task mode defaults to the "RUN" mode.

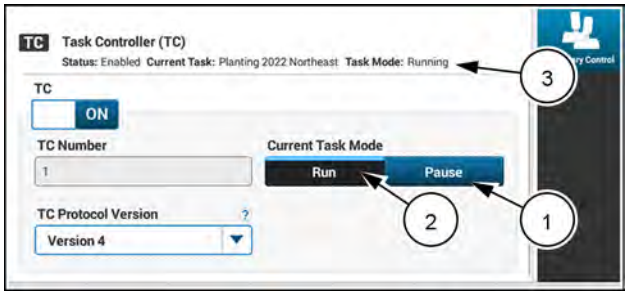
- When a task is created, the default task mode is “Run.”
- When a new task is selected, the task mode is “Run.”

Press the “Pause” button **(1)** to pause the task.

Press the “Run” button to **(2)** resume the task.

NOTE: *Non-active tasks are not affected by the state of the task mode.*

The current task mode **(3)** is displayed.



RAPH22PLM0076AA 12

If the task is paused, the “task paused” alarm appears, and the work state arrow on the top bar displays a paused icon **(1)**.

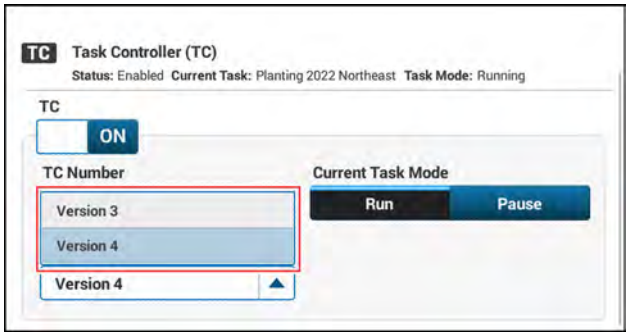
Press the “OK” button **(2)** to clear the alarm.

RAPH22PLM0083AA 13

TC protocol version

If you press the “TC Protocol Version” drop-down menu, version 4 and version 3 appear as options. The system defaults to version 4.

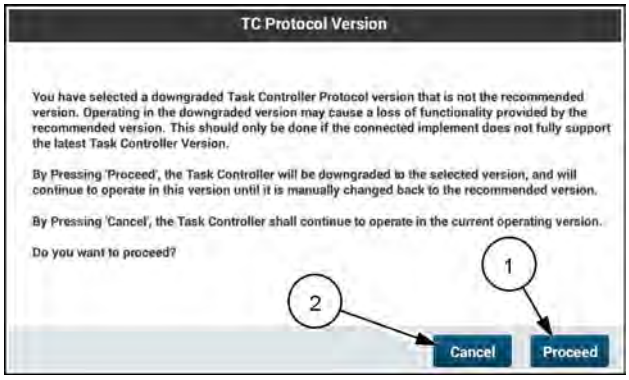
Selecting version 3 can resolve issues if the implement does not support version 4. CASE IH recommends using version 4 unless the implement is not compatible with version 4.



RAPH22PLM0084AA 14

If you select version 3, a “TC Protocol Version” information popup appears.

The popup states, “You have selected a downgraded Task Controller Protocol version that is not the recommended version. Operating in the downgraded version may cause a loss of functionality provided by the recommended version. This should only be done if the connected implement does not fully support the latest Task Controller Version.
By pressing “Proceed,” the Task Controller will be downgraded to the selected version, and will continue to operate in this version until it is manually changed back to the recommended version.
By Pressing “Cancel,” the Task Controller shall continue to operate in the current operating version.
Do you want to proceed?”



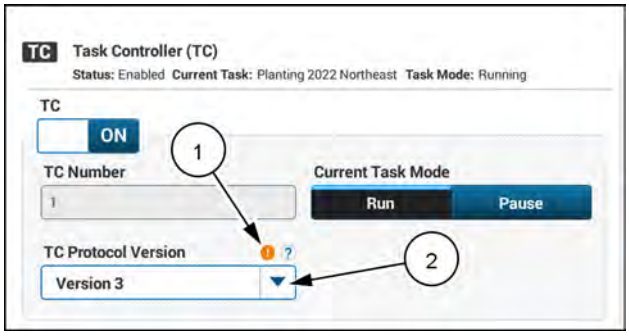
RAPH22PLM0085AA 15

Press the “Proceed” button **(1)** if you wish to downgrade the TC protocol version.

Press the “Cancel” button **(2)** to keep the currently selected TC protocol version.

A warning indicator **(1)** appears in the “TC Protocol Version” area if you select version 3.

Press the “TC Protocol Version” drop-down menu **(2)** if you wish to change the protocol version to version 4.



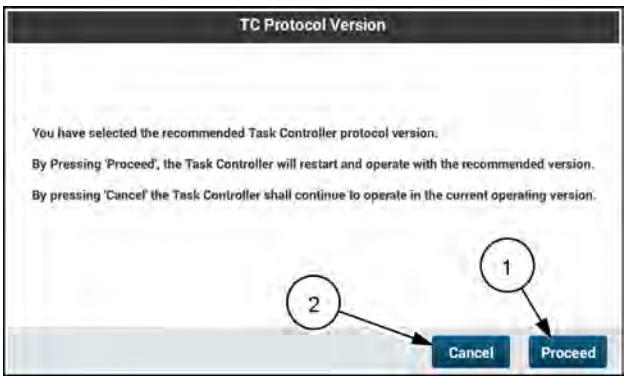
RAPH22PLM0086AA 16

If you change the TC protocol version from version 3 to version 4, a “TC Protocol Version” information popup appears.

The popup states, “You have selected the recommended Task Controller protocol version. By pressing “Proceed,” the Task Controller will restart and operate with the recommended version. By pressing “Cancel,” the Task Controller shall continue to operate in the current operating version.”

Press the “Proceed” button **(1)** if you wish to return to TC protocol version 4.

Press the “Cancel” button **(2)** to keep the currently selected TC protocol version.



RAPH22PLM0087AA 17

Assign auxiliary inputs

The “Auxiliary Control” screen is disabled on this vehicle.

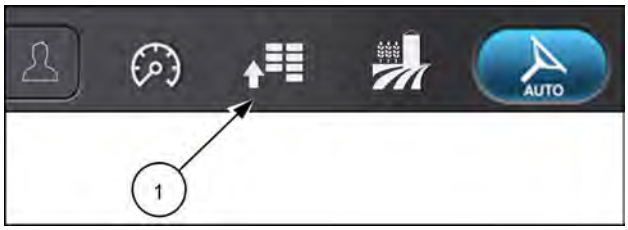
RAPH23PLM0331AA 1

Telematics and connectivity setup

"Connectivity" card

NOTE: *Connectivity features may not be available in all markets.*

Press the “Menu” button **(1)** on the top bar to open the “Menu” screen. Press the “Settings” tab, if necessary.



RAIL19PLM0121AA 1

Press the appropriate button to access the “Connectivity” card.

NHIL20PLM1547AA 2

The “Connectivity” card allows you to configure settings related to telematics and data transfer.

The “Antennas” screen contains selections for your:

- Cellular antenna
- Wi-Fi antenna
- GNSS antenna
- **Bluetooth®** antenna

The “Wifi” screen displays the current Wi-Fi network connection and additional saved or available networks.

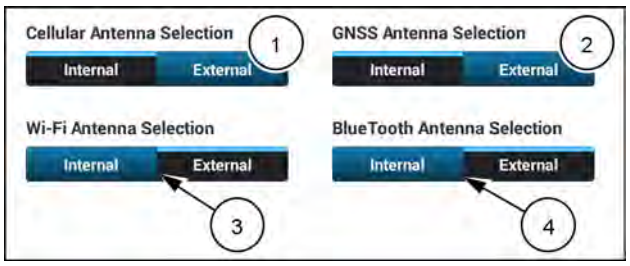
"Antennas" screen

The “Antennas” screen allows you to choose between an internal and external installation of the following components:

- Cellular antenna **(1)**
- GNSS antenna **(2)**
- Wi-Fi antenna **(3)**
- **Bluetooth®** antenna **(4)**

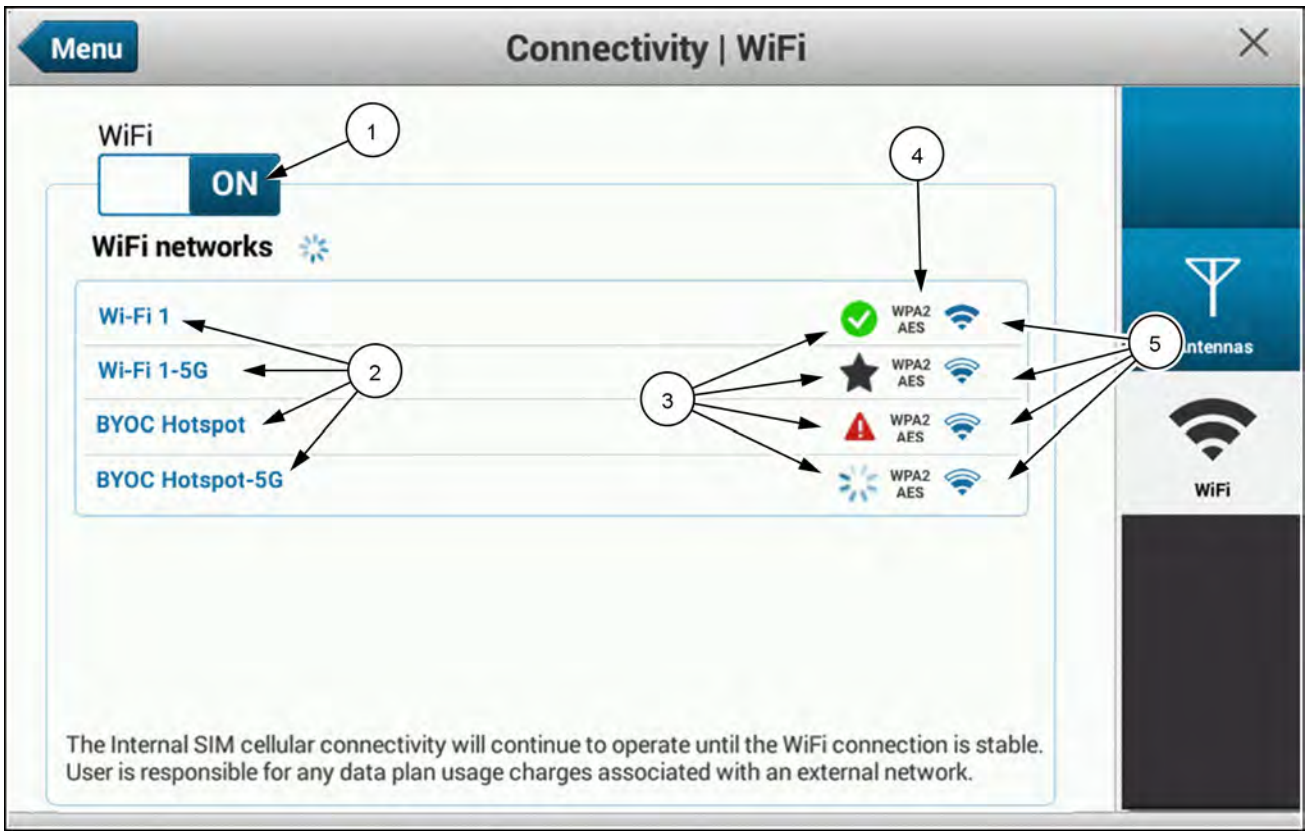
NOTE: *The Wi-Fi antenna selection and the* ***Bluetooth®*** *antenna selection are not supported in this vehicle.*

NOTE: *Once you have established the desired settings, the settings will remain the same through power cycles.*



RAPH23PLM0250AA 1

"Wi-Fi" screen



NHPH24PLM0201AA 1

The "WiFi" screen of the “Connectivity" card displays the following information regarding the Wi-Fi connection of the modem.

(1) – “WiFi” switch

Wi-Fi is turned off by default.

Wi-Fi can be turned on or off using the “WiFi” switch.

(2) – “WiFi networks”

The list of available networks in range displays here in order of signal strength.

(3) – Connection status

Current Wi-Fi network connection	Previously saved network	Password or connection error	Attempting to connect

(4) Network security

The network security protocol displays here for each network that is visible to the receiver.

(5) Signal strength

75–100%	50–74%	25–49%	0–24%

NOTE: *For more information about connecting to a Wi-Fi network, see “Connecting to Wi-Fi” (**4-94**)*

Connecting to Wi-Fi

Enabling Wi-Fi on the display

Press the “Menu” button **(1)** on the top bar to navigate to the “Menu” screen. Press the “Settings” tab, if necessary.

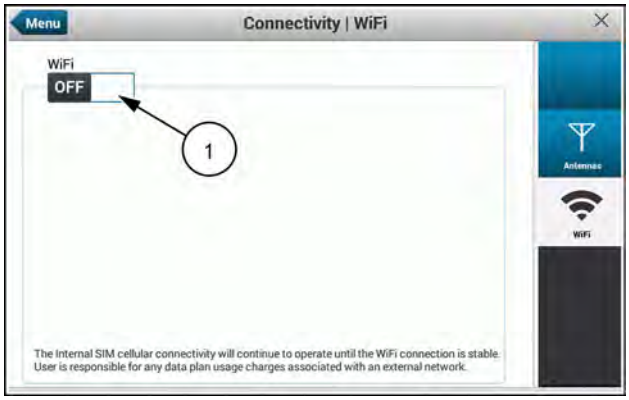
Press the appropriate button to access the “Connectivity” card.

Press the “WiFi” button to view the “Wifi” screen.

NHIL20PLM1547AA 1

Press the toggle **(1)** to turn “WiFi” on.

NOTE: *Alternatively, you can access the “Connectivity card” from the “Connectivity” icon on the top bar. For more information, see “Status indicators” (**3-35**).*



NHPH24PLM0185AA 2

Connecting to a Wi-Fi network

The list of available networks **(1)** in range displays.

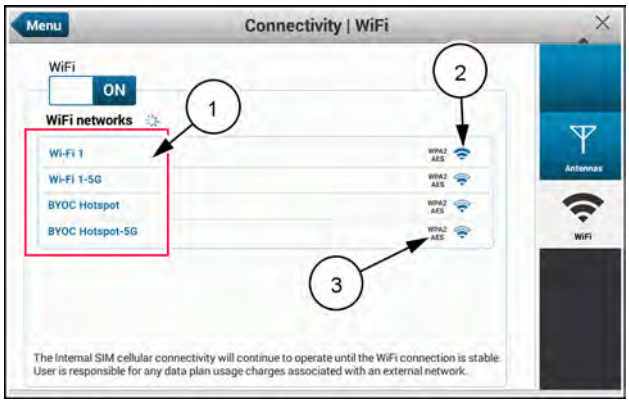
The available networks appear on the list in order of signal strength **(2)**.

75–100% 50–74% 25–49% 0–24%

The network security type **(3)** displays for each of the available networks, if applicable.

Press any of the available networks **(1)** to connect.

NOTE: *Usage of a mobile hotspot may incur costs for data consumption.*



NHPH24PLM0186AA 3

If the network you are connecting to is an unsecured network, a confirmation message displays:

“The network selected is unsecured. Are you sure you want to proceed?”

NHPH24PLM0187AA 4

Press the “Yes” button **(1)** to connect to the unsecured network.

Press the “No” button **(2)** to cancel and return to the previous screen.

If the network you are connecting to is a secured network, a pop-up window to enter the password appears.

NHPH24PLM0188AA 5

The following secure networks are supported:

- WEP
- WPA
- WPA2–AES
- WPA/WPA2–Mixed

NOTE: *WPA enterprise, WPA2 enterprise, WPA2 enterprise mixed and WPA3 are currently not supported.*

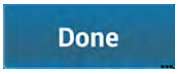
Press the password window to enter the password using the keyboard.

Network security password requirements

WEP	10, 28, or 56 hexadecimal characters
WPA	8–63 alphanumeric characters
WPA2–AES	
WPA/ WPA2–Mixed	

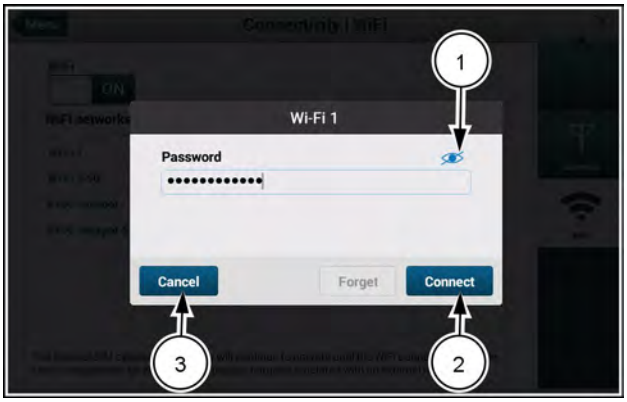
NHPH24PLM0189AA 6

Enter the password using the keyboard **(1)**.



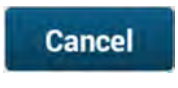
Press the “Done” button **(2)** to confirm the password.

If necessary, press the “Eye” icon **(1)** to view the password.



NHPH24PLM0200AA 7

Press the “Connect” button **(2)** to connect to the network.



Press the “Cancel” button **(3)** to return to the previous screen.

As the system is connecting to the network, a spinning wheel **(1)** icon is shown.

When the network has successfully connected, a green check **(2)** displays.

The system has the ability to store multiple saved networks. Every network that you have manually connected is saved for future use.

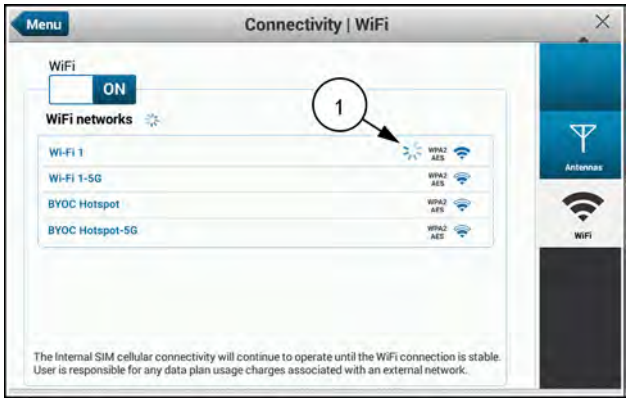
Connection status

Connected	Saved network	Attempting to connect	Connection error

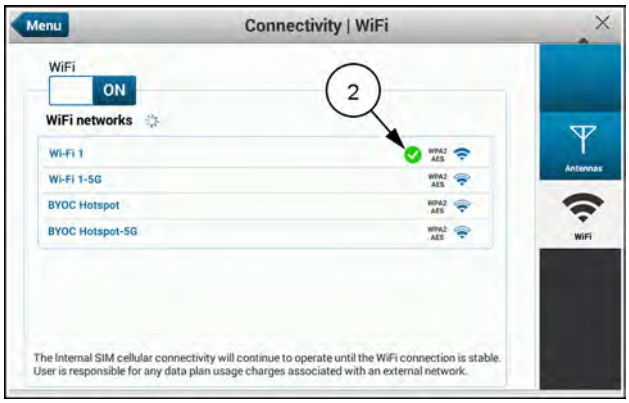
NOTE: *The system will automatically connect to any saved network that has the highest signal strength.*

NOTE: *When connected to a network that no longer has internet connectivity, the system will remain connected to that network until it is disabled, out of range, or until you travel inside the coverage of a stronger saved network signal.*

NOTE: *If no networks are in range, or if Wi-Fi is disabled, the system automatically falls back to cellular coverage. However, it will not connect to a cellular network if you are still connected to any Wi-Fi network, regardless of the internet connectivity status.*



NHPH24PLM0191AA 8



NHPH24PLM0192AA 9

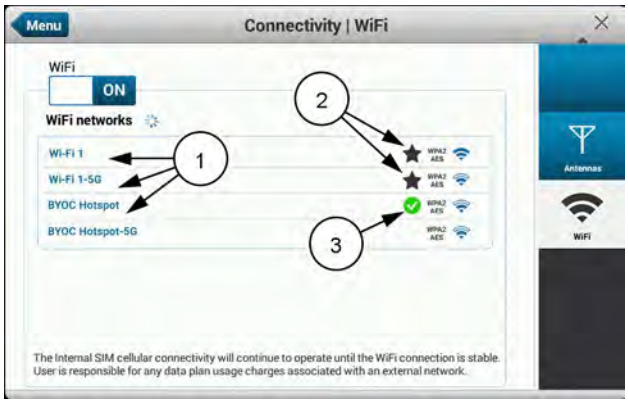
Forgetting a network

Forgetting a network removes the saved network credentials of that network from the system. The system will no longer automatically connect to that network for any reason.

Press any of the saved networks **(1)** to forget that network.

Any network that you have previously connected can be forgotten.

Forgetting a saved network **(1)** will not interfere with the current Wi-Fi connection. If you forget the current Wi-Fi connection **(2)** the system will automatically connect to the saved network with the highest signal strength.



NHPH24PLM0193AA 10

The network password pop-up screen displays.

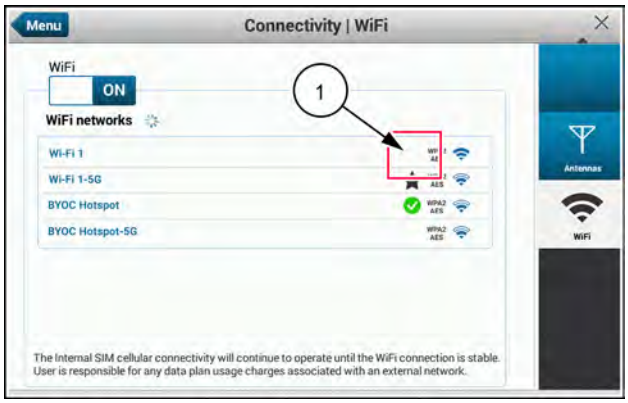
Press the “Forget” button to remove the saved credentials for that network from the system.

NHPH24PLM0194AA 11

The network is forgotten and the saved credentials are no longer stored in the system.

The network status **(1)** is now blank indicating the network is no longer saved.

NOTE: *Manually connecting to any forgotten network will add it back to the saved network list.*

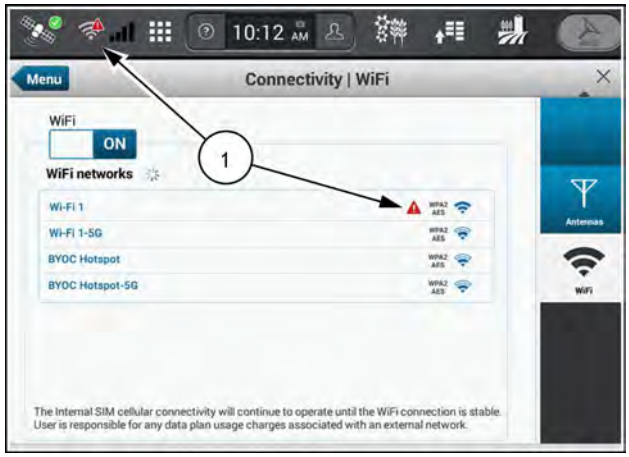


NHPH24PLM0195AA 12

Connection errors

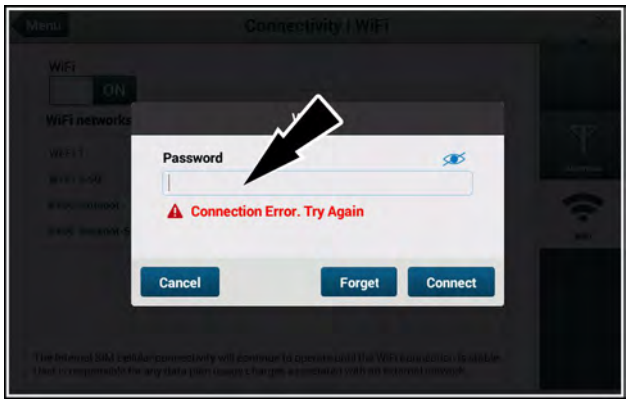
If you are attempting to connect to a network and enter the incorrect password, a red exclamation point **(1)** displays.

Press that network on the list to enter the correct password.



NHPH24PLM0196AA 13

Press the password window to enter the correct password using the keyboard.



NHPH24PLM0197AA 14

Enter the correct password using the keyboard **(1)**.

Done

Press the “Done” button **(1)** to confirm the password.

NHPH24PLM0198AA 15

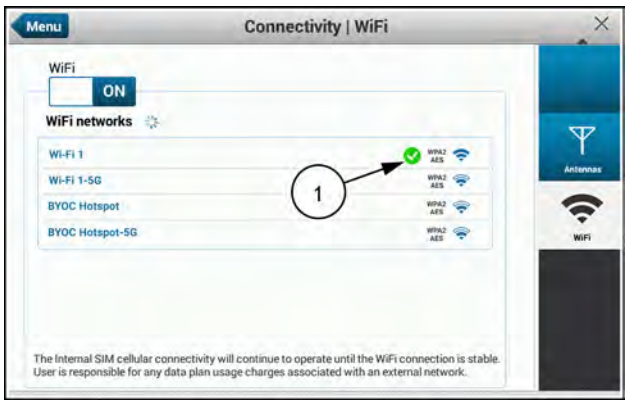
If necessary, press the “Eye” icon **(1)** to view the new password.

Connect

Press the “Connect” button to use the updated password to connect to the network.

NHPH24PLM0199AA 16

The password is now correct and the network connection **(1)** was successful.



NHPH24PLM0192AA 17

Wi-Fi connection environments

Enabling Wi-Fi on the display

Press the “Menu” button **(1)** on the top bar to navigate to the “Menu” screen. Press the “Settings” tab, if necessary.

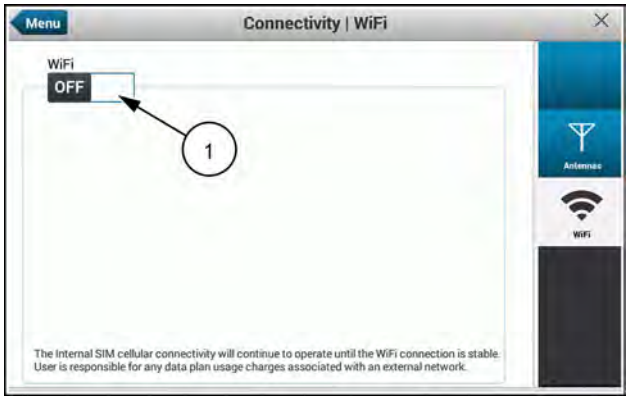
Press the appropriate button to access the “Connectivity” card.

Press the “WiFi” button to view the “Wifi” screen.

NHIL20PLM1547AA 1

Press the toggle **(1)** to turn “WiFi” on.

NOTE: *Alternatively, you can access the “Connectivity card” from the “Connectivity” icon on the top bar. For more information, see “Status indicators” (**3-35**).*



NHPH24PLM0185AA 2

Connecting to a Wi-Fi network

The list of available networks **(1)** in range displays.

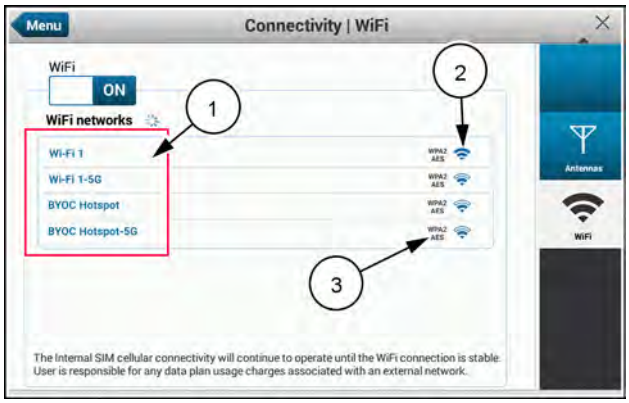
The available networks appear on the list in order of signal strength **(2)**.

75–100% 50–74% 25–49% 0–24%

The network security type **(3)** displays for each of the available networks, if applicable.

Press any of the available networks **(1)** to connect.

NOTE: *Usage of a mobile hotspot may incur costs for data consumption.*



NHPH24PLM0186AA 3

If the network you are connecting to is an unsecured network, a confirmation message displays:

“The network selected is unsecured. Are you sure you want to proceed?”

NHPH24PLM0187AA 4

Press the “Yes” button **(1)** to connect to the unsecured network.

Press the “No” button **(2)** to cancel and return to the previous screen.

If the network you are connecting to is a secured network, a pop-up window to enter the password appears.

NHPH24PLM0188AA 5

The following secure networks are supported:

- WEP
- WPA
- WPA2–AES
- WPA/WPA2–Mixed

NOTE: *WPA enterprise, WPA2 enterprise, WPA2 enterprise mixed and WPA3 are currently not supported.*

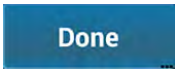
Press the password window to enter the password using the keyboard.

Network security password requirements

WEP	10, 28, or 56 hexadecimal characters
WPA	8–63 alphanumeric characters
WPA2–AES	
WPA/ WPA2–Mixed	

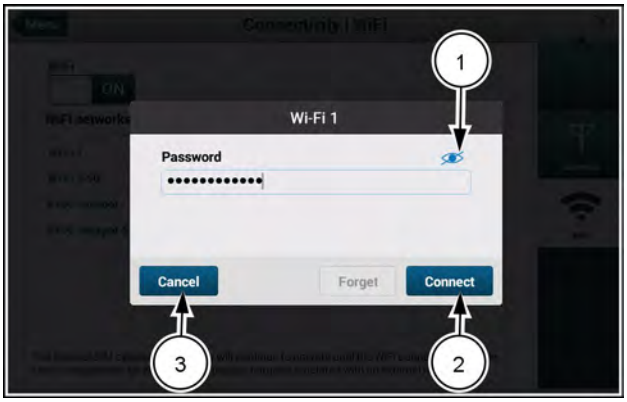
NHPH24PLM0189AA 6

Enter the password using the keyboard **(1)**.



Press the “Done” button **(2)** to confirm the password.

If necessary, press the “Eye” icon **(1)** to view the password.



NHPH24PLM0200AA 7

Press the “Connect” button **(2)** to connect to the network.

Press the “Cancel” button **(3)** to return to the previous screen.

As the system is connecting to the network, a spinning wheel **(1)** icon is shown.

When the network has successfully connected, a green check **(2)** displays.

The system has the ability to store multiple saved networks. Every network that you have manually connected is saved for future use.

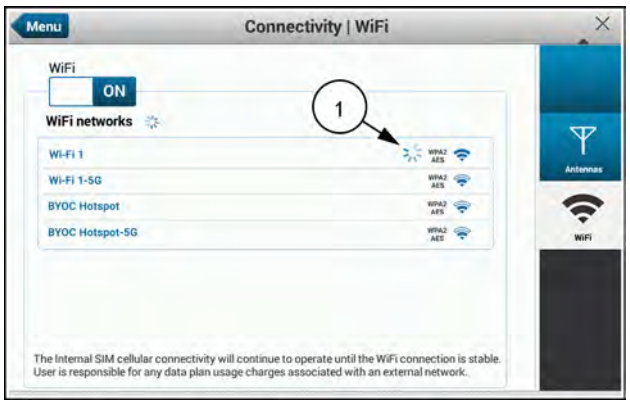
Connection status

Connected	Saved network	Attempting to connect	Connection error

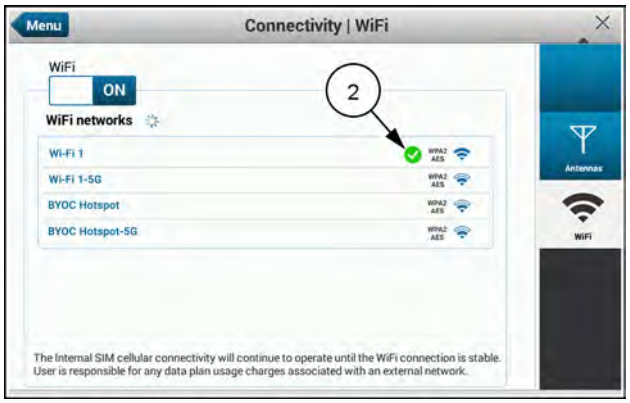
NOTE: *The system will automatically connect to any saved network that has the highest signal strength.*

NOTE: *When connected to a network that no longer has internet connectivity, the system will remain connected to that network until it is disabled, out of range, or until you travel inside the coverage of a stronger saved network signal.*

NOTE: *If no networks are in range, or if Wi-Fi is disabled, the system automatically falls back to cellular coverage. However, it will not connect to a cellular network if you are still connected to any Wi-Fi network, regardless of the internet connectivity status.*



NHPH24PLM0191AA 8



NHPH24PLM0192AA 9

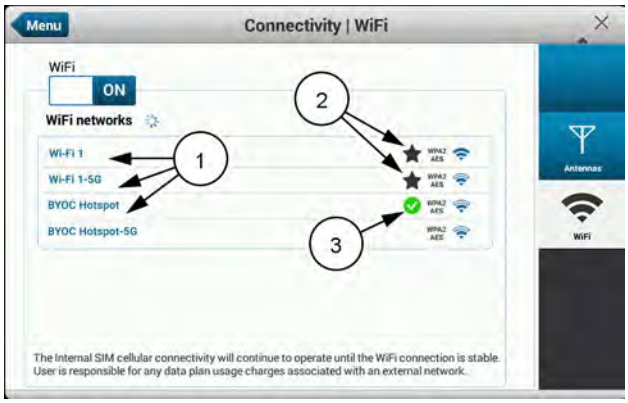
Forgetting a network

Forgetting a network removes the saved network credentials of that network from the system. The system will no longer automatically connect to that network for any reason.

Press any of the saved networks **(1)** to forget that network.

Any network that you have previously connected can be forgotten.

Forgetting a saved network **(1)** will not interfere with the current Wi-Fi connection. If you forget the current Wi-Fi connection **(2)** the system will automatically connect to the saved network with the highest signal strength.



NHPH24PLM0193AA 10

The network password pop-up screen displays.

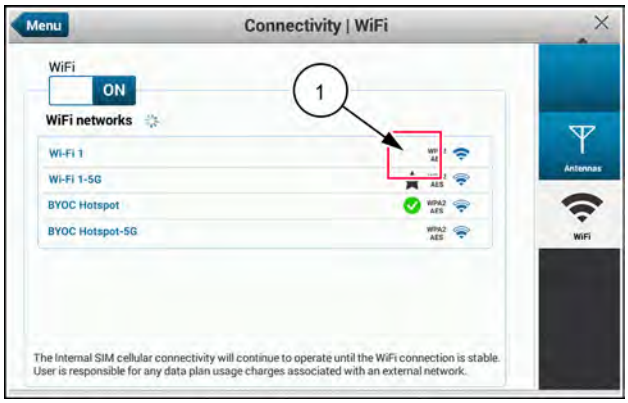
Press the “Forget” button to remove the saved credentials for that network from the system.

NHPH24PLM0194AA 11

The network is forgotten and the saved credentials are no longer stored in the system.

The network status **(1)** is now blank indicating the network is no longer saved.

NOTE: *Manually connecting to any forgotten network will add it back to the saved network list.*

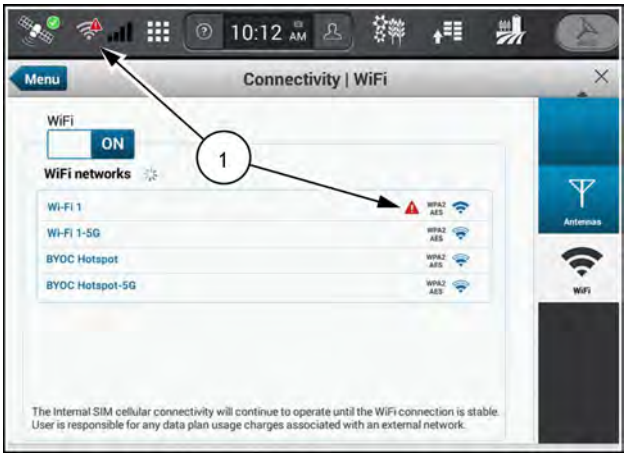


NHPH24PLM0195AA 12

Connection errors

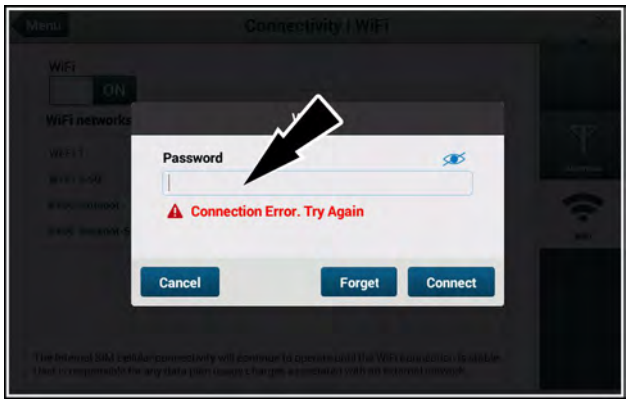
If you are attempting to connect to a network and enter the incorrect password, a red exclamation point **(1)** displays.

Press that network on the list to enter the correct password.



NHPH24PLM0196AA 13

Press the password window to enter the correct password using the keyboard.



NHPH24PLM0197AA 14

Enter the correct password using the keyboard **(1)**.

Done

Press the “Done” button **(1)** to confirm the password.

NHPH24PLM0198AA 15

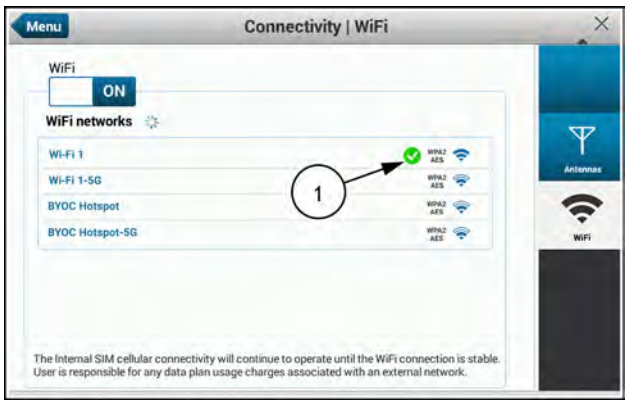
If necessary, press the “Eye” icon **(1)** to view the new password.

Connect

Press the “Connect” button to use the updated password to connect to the network.

NHPH24PLM0199AA 16

The password is now correct and the network connection **(1)** was successful.



NHPH24PLM0192AA 17

Troubleshooting and known issues

Known Issues

Issue	Description
When connected to a Wi-Fi network with no internet connectivity, the system does not switch to a different network.	The PCM displays any visible Wi-Fi network and will automatically connect to any saved network with the highest signal strength, but does not check for internet connectivity. The PCM will only connect to cellular if there is no Wi-Fi signal present.
The display automatically switches to a different network.	The PCM automatically switches to any saved or previously used network with the highest signal strength.
WEP password field only supports passwords that are 10, 26, or 58 characters	Depending on the level of network encryption it is required that the password be 10 digits, 26 digits, or 58 digits.
WEP password requires the use of a hexadecimal key	WEP password standards require that passwords only contain 0-9 and A-F.
WPA and WPA2 password field only supports 8–63 characters	The PCM only supports a minimum of 8 characters and a maximum of 63 characters.
Password field does not support international characters and keyboards	The display currently only supports the US alphanumeric keyboard.

Supported Wi-Fi security protocols

- None (open network)
- WEP
- WPA
- WPA2–AES
- WPA2–TKIP
- WPA2–Mixed

NOTE: *Currently, the PCM does not support the use of WPA-Enterprise, WPA2-Enterprise, WPA2-Enterprise mixed, or WPA3*

5 - OPERATION

Introduction

Autoguidance acknowledgement

When autoguidance is enabled for the first time, the following message appears:

“An operator trained and qualified to use this vehicle's autoguidance system must be fully seated in the operator's seat at all times while the vehicle engine is running, including when the system is in AUTO mode.

“This vehicle's autoguidance system cannot identify or avoid obstacles in the path of the vehicle. The operator is responsible for maintaining full control of the vehicle and avoiding all obstacles.

“By pressing “Accept,” you acknowledge and certify that you have read the vehicle’s manual, and understand how the vehicle and the autoguidance system work, and that you assume full responsibility for its safe operation. Failure to follow these instructions may result in serious injury or death.”

RAPH23PLM1251BA 1

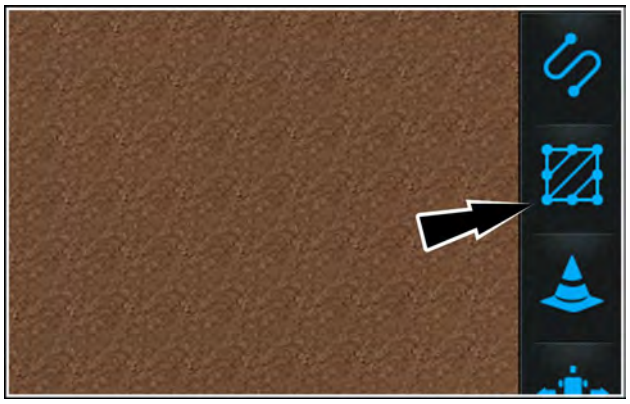
Field mapping

Boundary and headland creation

Boundary creation

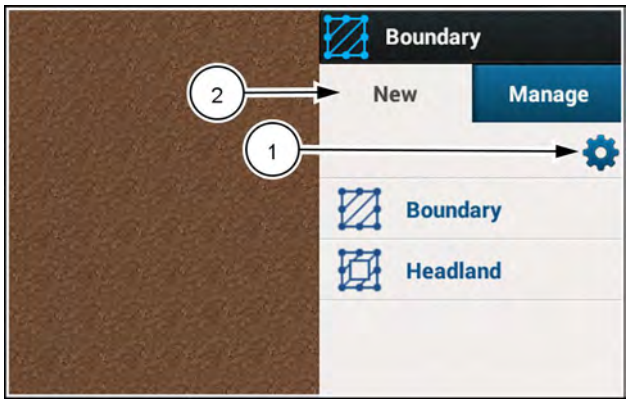
Most field operations that use advanced farming systems use field boundaries. You can record field boundaries for operating with autoguidance. Many swath patterns that the autoguidance system uses require you to record a field boundary.

In the right-hand menu, press the “Boundary” icon.



NHIL20PLM0086AA 1

The “Boundary” menu appears.



NHIL20PLM0098AA 2

Auto-complete configuration

The auto-complete configuration establishes the distance between a pause point in the boundary and a resuming point in which the system extends the recorded boundary between the two points. The auto-complete function also extends the final recording point in the boundary to the starting point of the boundary.

You can configure a custom auto-complete distance, or you can use the previously specified attachment width.

Press the “gear” icon **(1)** on the “New” tab **(2)** of the “Boundary” menu.

The “Auto-Complete” dialog opens.

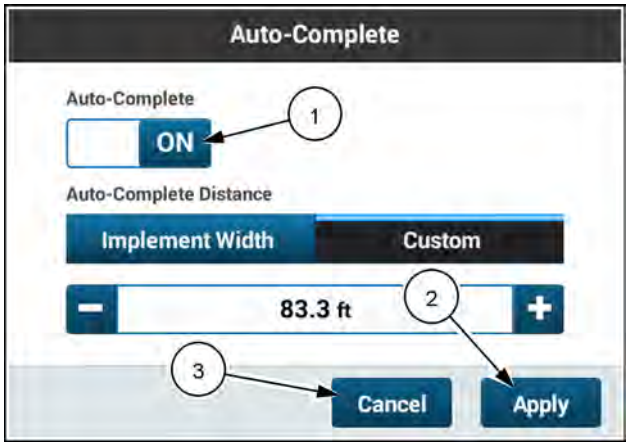
Use the “Auto-Complete” ON/OFF switch **(1)** to activate or deactivate the auto-complete feature.

Under “Auto-Complete Distance”, select either the “Implement Width” button or the “Custom” button as needed.

If you select “Custom” for your auto-complete distance, enter the desired distance.

After entering your changes, press the “Apply” button **(2)**. The “Auto-Complete” dialog disappears. Boundary recording will now use your auto-complete configuration.

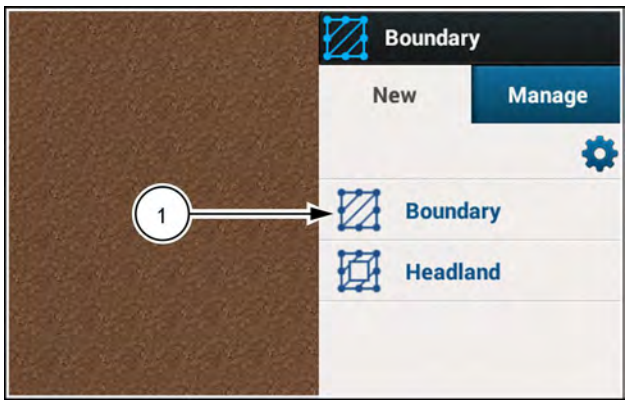
Press the “Cancel” button **(3)** to close the “Auto-Complete” dialog and discard your changes.



RAPH22PLM0932BA 3

Create and record a boundary

Press the “Boundary” menu item **(1)** to create a new boundary.



NHIL20PLM0098AA 4

Press the “Recording Point” drop down menu **(2)** to choose the point of the vehicle that will be used to record the boundary.

- Left – The left end of the attachment.
- Right – The right end of the attachment.
- Center – The center point of the vehicle.

The “Recording point appears on the map **(3)** at the selected point of the attachment or vehicle.

Under “Boundary Type” **(4)** choose the applicable boundary type.

- “Outer” boundary defines the boundary edges of a field.
- “Inner” boundary represents an object or area, inside of a field, that is to be avoided or otherwise noted. Examples of inner boundaries include ponds, fences, rocks, roads, etc.

NOTE: *The options available in the “Boundary” menu will change based on the type of boundary you select.*

An inner boundary can be marked “Passable” or “Impassable” **(5)**.

You can note the type of inner boundary that you are recording by pressing the drop-down menu **(6)** and selecting a type.

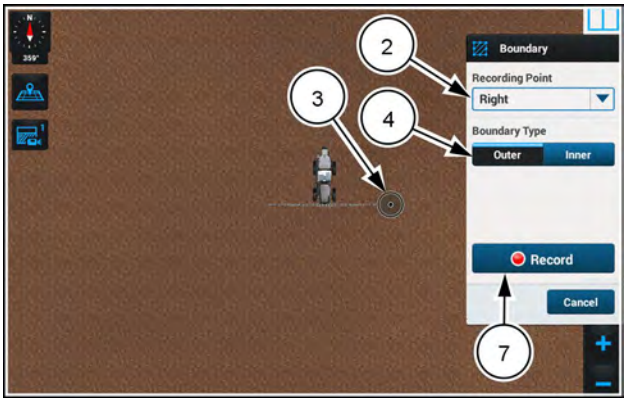
Press the “Record” button **(7)**. Drive the vehicle along the desired boundary route.

The following actions occur:

- The “Boundary” menu closes.
- A recording indicator **(1)** appears on the “Boundary” icon in the right-hand menu.
- The recording point **(2)** on the attachment or vehicle in the map flashes red.
- The edit panel **(3)** appears at the top of the map.

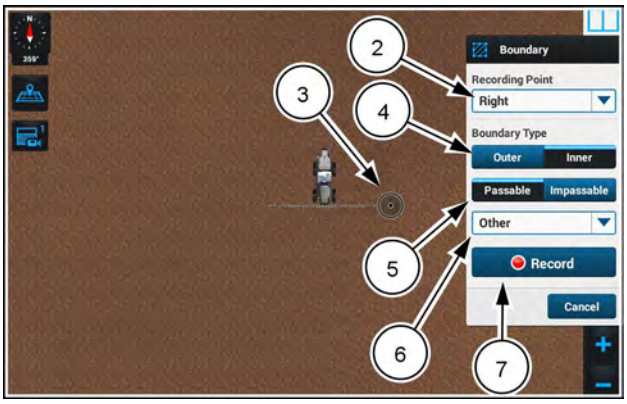
As you drive through the field, the boundary line **(4)** appears from where the recording point on the attachment or vehicle passes over the ground.

Outer boundary

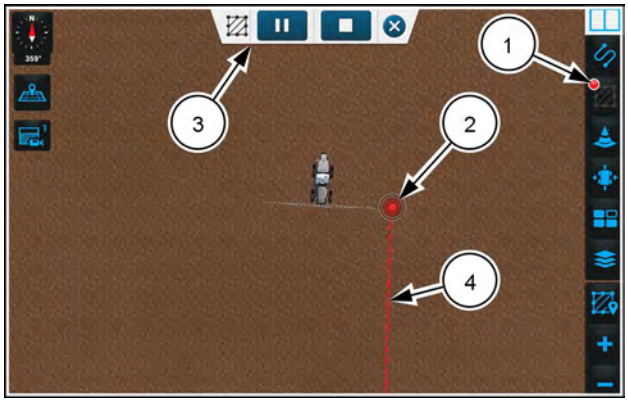


NHPH24PLM0147AA 5

Inner boudary



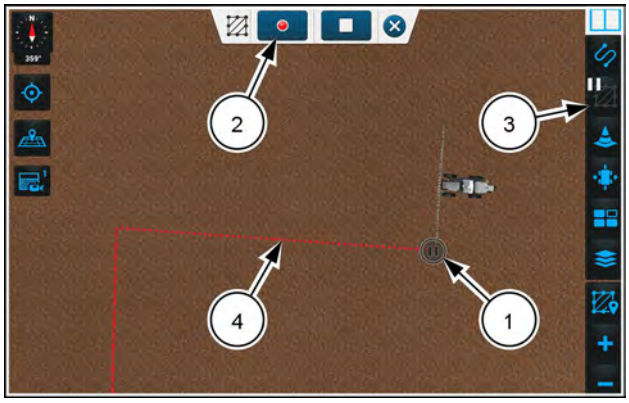
NHPH24PLM0143AA 6



RAPH22PLM1773AA 7

Pause recording

If you press the “Pause” button in the edit panel, the recording point **(1)** on the attachment or vehicle changes to a “Pause” icon. The “Pause” button in the edit panel changes to a “Record” button **(2)**. The “Boundary” button **(3)** becomes inactive with a “Pause” icon on it.



RAPH22PLM1774AA 8

If you continue to move through the field while the recording is paused, a segmented line **(4)** appears along the path taken by the “Pause” indicator on the attachment or vehicle. This line is not a recorded line. It only links a straight line from the last recorded point where you paused the recording and the current position of the “Pause” icon on the attachment or vehicle.

You can resume recording if you have moved the vehicle after pausing recording.

Press the “Record” button in the edit panel.

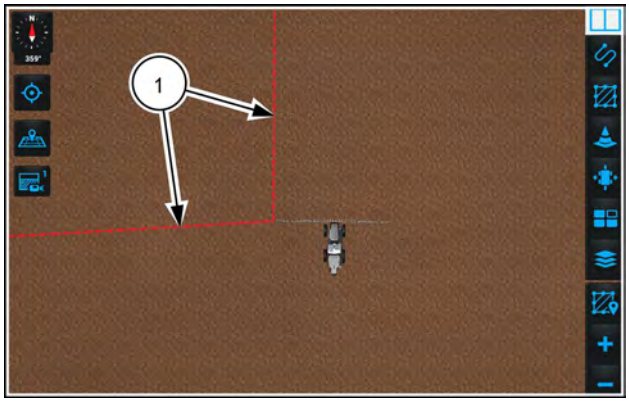
RAIL18PLM0121AA 9

The line between the point where you paused the recording and the current vehicle location becomes part of the boundary line. The “Pause” icon on the attachment or vehicle changes to a “Recording” icon. Boundary recording resumes.

Finish recording

Boundary recording stops when you drive close enough to the starting point of the recording so that it auto-completes. You can stop boundary recording by pressing the “Stop” button in the edit panel.

To stop recording, press the “Stop” button in the edit panel.



RAPH22PLM1775AA 10

If the starting and stopping points are within the distance in the auto-complete setting, the boundary line links the two points by drawing a straight line between them **(1)**. This completes and saves the boundary to the map. The following actions occur:

- The edit panel closes after five seconds.
- The recording indicator on the “Boundary” icon in the right-hand menu disappears.
- The software assigns a name to the boundary.
- An annotation appears on the map for five seconds.

The “Stop” button does not become active until you are far enough away from the starting point of the recording to make a usable boundary. Once you have recorded enough to make a usable boundary, the “Stop” button becomes active.

RAIL19PLM0176AA 11

Press the “Stop” button to close the dialog and remove the boundary from the map.

Cancel recording

RAIL18PLM0121AA 12

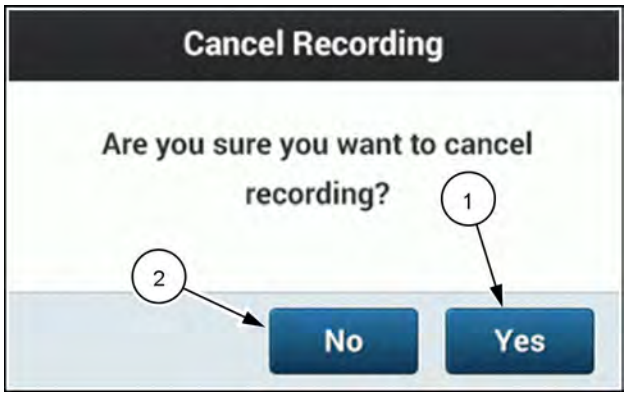
You can cancel the recording of a boundary at any time during the recording process.

To cancel the recording, press the “X” button in the edit panel.

A confirmation dialog appears.

Press the “Yes” button **(1)** to close the dialog and cancel the recording. All points, lines, and annotations disappear from the map.

Press the “No” button **(2)** to close the dialog and return to the recording process.

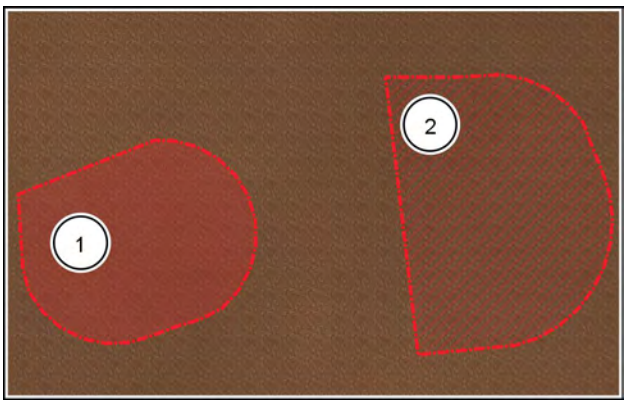


RAIL18PLM0122AA 13

Inner boundary differences

When you create a passable inner boundary **(1)**, the interior of the inner boundary fills with solid, transparent red.

When you create an impassable inner boundary **(2)**, the interior of the inner boundary fills in with cross-hatched, transparent red lines.



RAIL19PLM0174AA 14

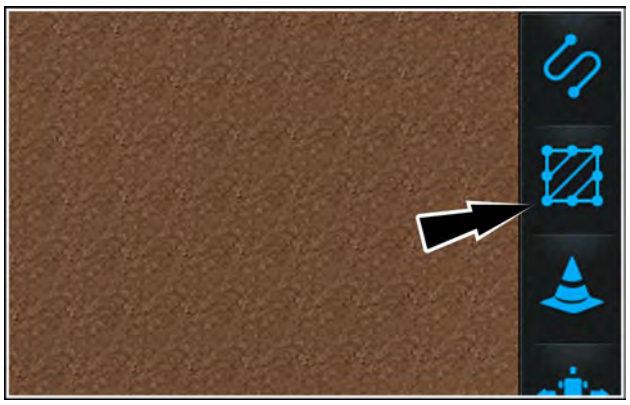
Boundary management

You can modify a boundary in the “Boundary” menu, “Manage” tab.

NOTE: *The “Boundary’ menu is not available while the autoguidance is engaged. To modify an existing boundary, first disengage the autoguidance.*

Rename edit, or delete a boundary

In the right-hand menu, press the “Boundary” icon.



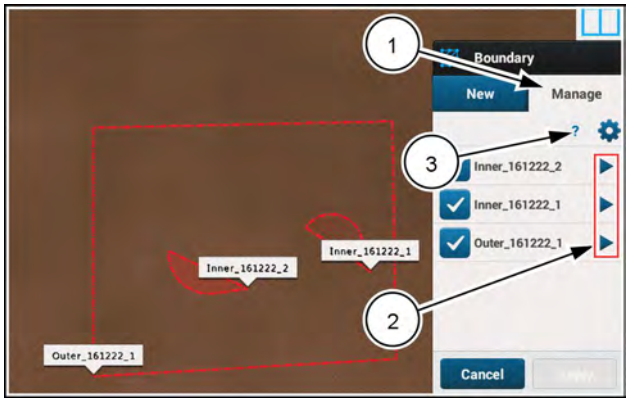
NHIL20PLM0086AA 1

The “Boundary” menu appears. If needed, select the “Manage” tab **(1)**.

The following items appear when you select the “Manage” tab:

NOTE: *If your vehicle has dual displays, opening the “Manage” tab in one of the displays disables the “Boundary” icon in the other display.*

- A list of all available boundaries for the current field appears in their order of creation.
- A scroll bar appears if there are more boundaries than can fit in the menu.
- The map zooms out enough to show all of the listed boundaries.
- Annotations appear for all boundaries in the currently selected field, regardless of activation status. The annotations remain on the map until you exit the “Manage” tab or press the arrow for an individual boundary. Pressing the arrow next to a boundary removes the annotations from all boundaries.
- All swaths and landmarks for the current field appear. The swaths and landmarks do not show annotations and are not selectable.



RAPH22PLM1777AA 2

Press the arrow **(2)** next to a boundary to select it for editing.

NOTE: *Pressing the “Information” button* ***(3)*** *opens a message that states, “The boundaries that are part of the job will appear in the boundary list in italicized font.” This refers to* ***AFS AccuSync™*** *jobs.*

The map focuses on the selected boundary.

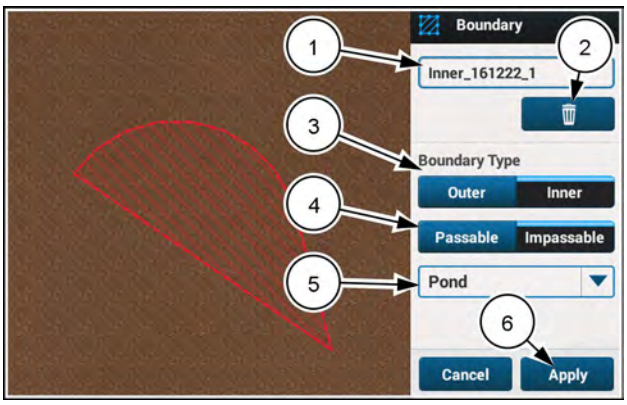
Press the box **(1)** to edit the boundary name.

Press the “delete” button **(2)** to delete the boundary. A delete boundary confirmation prompt appears.

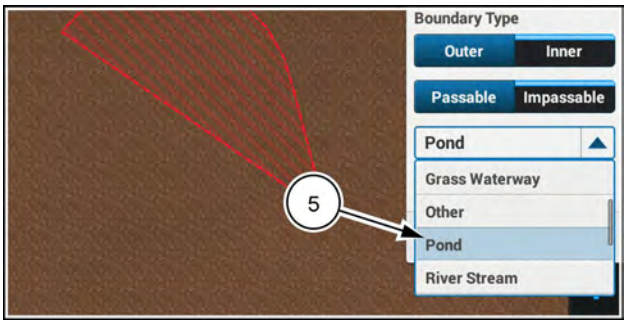
When you select the inner boundary setting **(3)**, a “Passable/Impassable” toggle **(4)** and a boundary type drop-down menu **(5)** appear.

Select the type of impassable boundary from the drop-down menu **(5)** if needed.

When you change a setting, press the active “Apply” button **(6)** to accept your changes and return to the boundary “Manage” tab.



RAPH22PLM1778AA 3



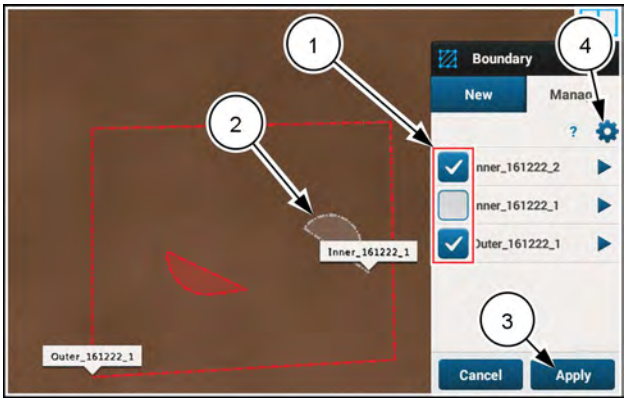
RAPH22PLM1779AA 4

Boundary Warning

After you accept changes to a boundary, the label of the affected boundary disappears after a few seconds in the map. This only affects the most recently changed boundary.

You can activate and deactivate the boundaries by pressing the check boxes **(1)** next to each boundary name. The deactivated boundary **(2)** turns white in the map.To apply your changes, press the “Apply” button **(3)**.

If needed, press the “Gear” icon **(4)** in the upper-right-hand corner of the boundary “Manage” tab. The “Global Settings” window appears.



RAPH22PLM1780AA 5

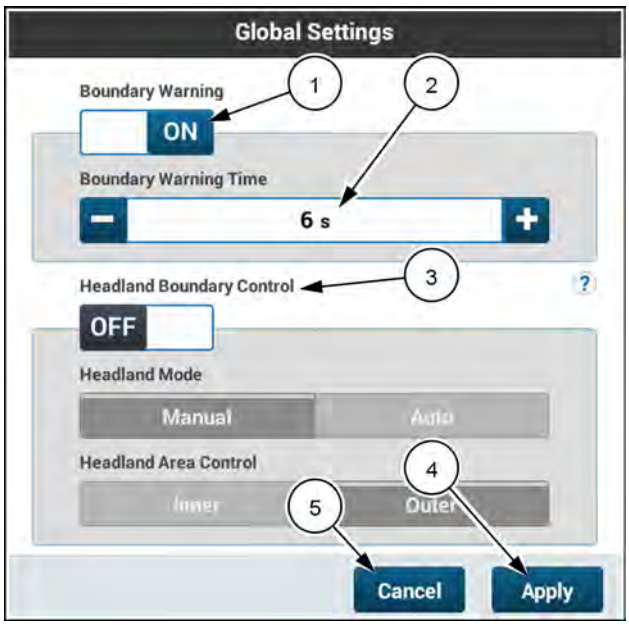
Use the “Boundary Warning” ON/OFF switch **(1)** to activate or deactivate the boundary warning alarm.

If boundary warnings are activated, configure the time that you wish to elapse between the beginning of the warning and when you make contact with the boundary. Use the stepper **(2)** to adjust the time.

Use the “Headland Boundary Control” function **(3)** if you need to control product application when crossing into the headland. For more information, see “Headland management” (**5-19**).

The “Apply” button **(4)** activates if you have changed any of the values. After entering your changes, press the “Apply” button. The “Global Settings” dialog disappears. Your boundaries will now follow this configuration.

Press the “Cancel” button **(5)** to close the “Global Settings” window and discard your changes.

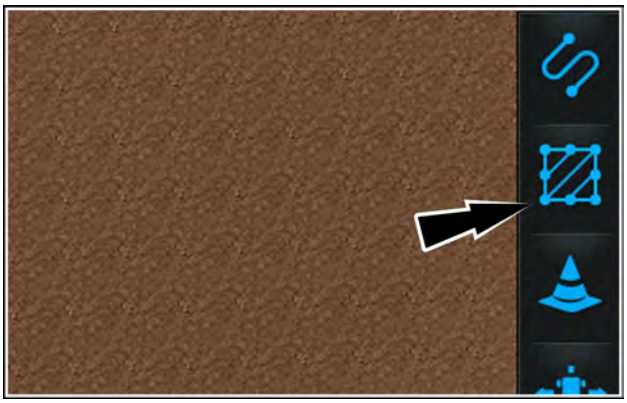


RAPH22PLM0933BA 6

Headland creation

Many field operations using autoguidance require the creation or reuse of a headland in the software. You can use the “Boundary” menu to create or reuse your headland.

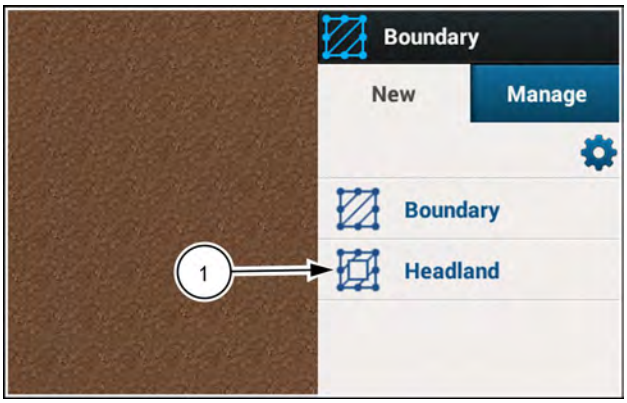
In the right-hand menu, press the “Boundary” icon.



NHIL20PLM0086AA 1

The “Boundary” menu appears. Select the “Headland” **(1)** menu option.

NOTE: *If there is no boundary recorded in the display, then the “Headland” option is not available.*

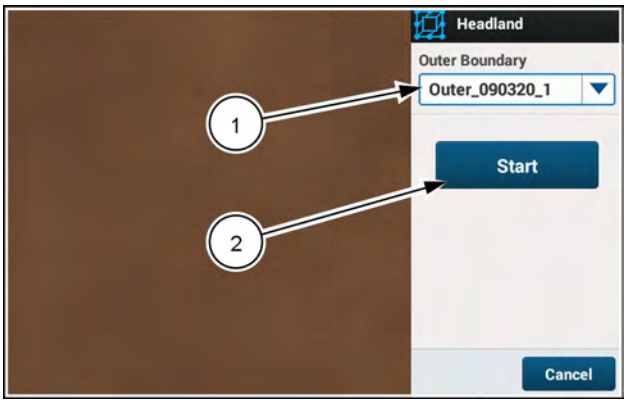


NHIL20PLM0098AA 2

The “Headland” menu appears.

In the “Outer Boundary” drop-down menu select the boundary **(1)** within which you wish to create the headland.

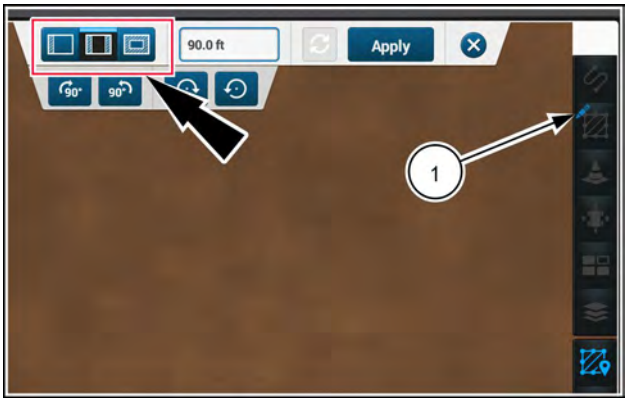
Press the “Start” button **(2)**. The headland edit panel appears, and the headland displays within the boundary on the map.



RAIL20PLM1060AA 3

Headland overview

When headland creation is started, an “Edit” icon **(1)** appears on the “Boundary” icon. All other map functions will be grayed out and unavailable until the headland is applied or cancelled.



NHPH23PLM0544AA 4

To create a single headland at one end of the field, press the “single headland” button.

To create a headland at both ends of the field, press the “double headland” button.

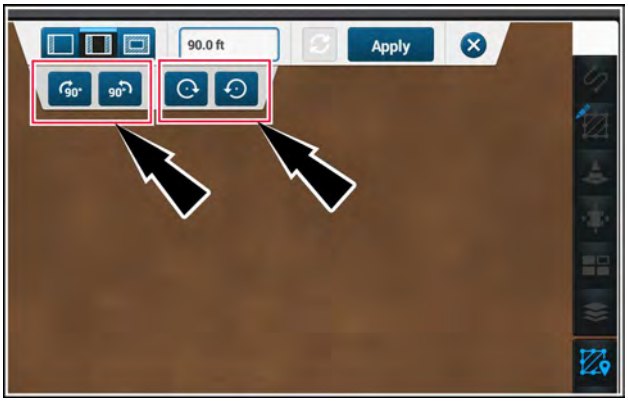
To create a headland on all sides of a field, press the “all headland” button.

This button rotates the single headland or double headlands **90°** clockwise.

This button rotates the single headland or double headlands **90°** counter-clockwise.

This button moves a selected point in small fixed increments clockwise along the perimeter of the boundary.

This button moves a selected point in small fixed increments counter-clockwise along the perimeter of the boundary.



NHPH23PLM0544AA 5

The “width” window displays the pre-determined width of the headland.

By pressing the “width” window you can select one, two, or three times your attachment width, or define a custom headland width.

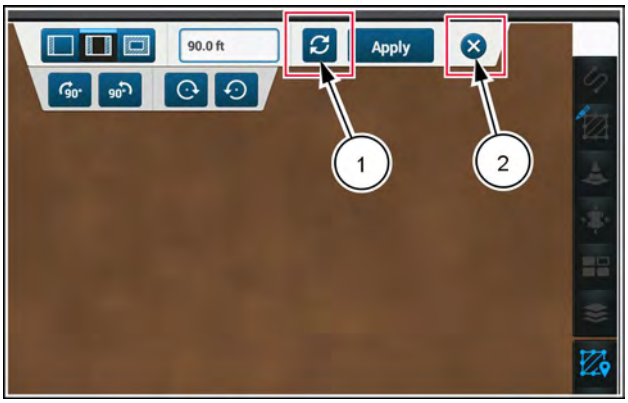
NOTE: *The default width is three times the width of the configured attachment.*

NHPH23PLM0545AA 6

You are able to restart or cancel headland creation at any time.

To cancel any changes and restart the headland creation process press the “restart” button **(1)** at any time

To cancel any changes and exit the headland creation screen press the “exit” button **(2)** at any time.



NHPH23PLM0565AA 7

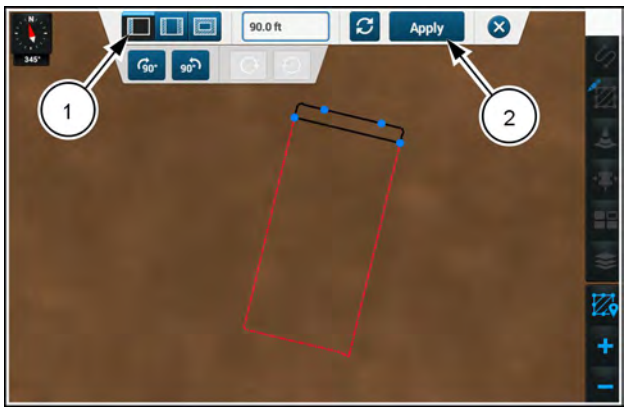
Single headland

To record a single headland on one side of the field, select single headland mode **(1)**.

A single headland appears inside the boundary, offset from the boundary by the default headland width.

NOTE: *If the selected width of the headland is too wide for the field, a message appears informing you that you cannot record the headland. Adjust the headland width as needed to resolve this issue.*

Press the “Apply” button **(2)** if you are satisfied with the single headland.



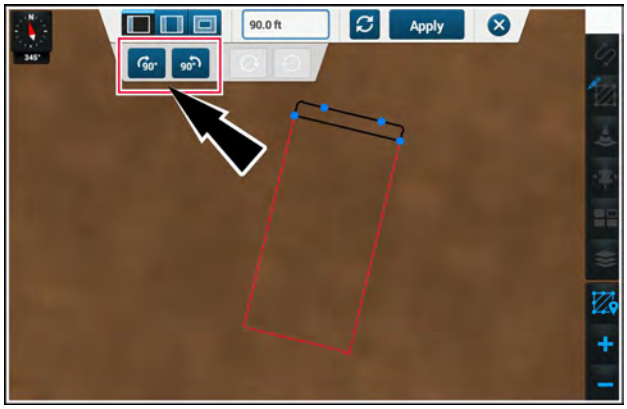
NHPH23PLM0539AA 8

Rotate a single headland

Press either rotate button to move the single headland **90°** in the direction indicated on the button.

This button rotates the single headland **90°** clockwise.

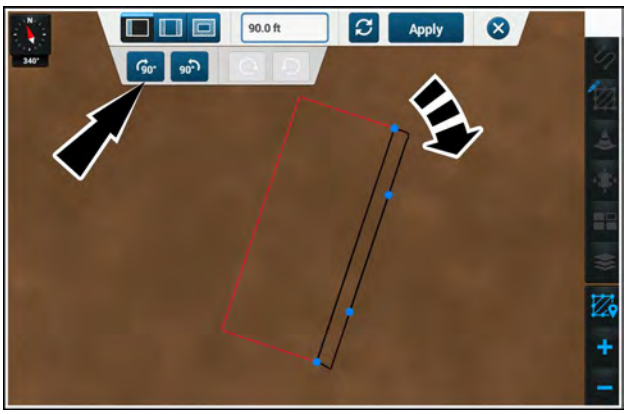
This button rotates the single headland **90°** counter-clockwise.



NHPH23PLM0539AA 9

The single headland moves **90°** clockwise.

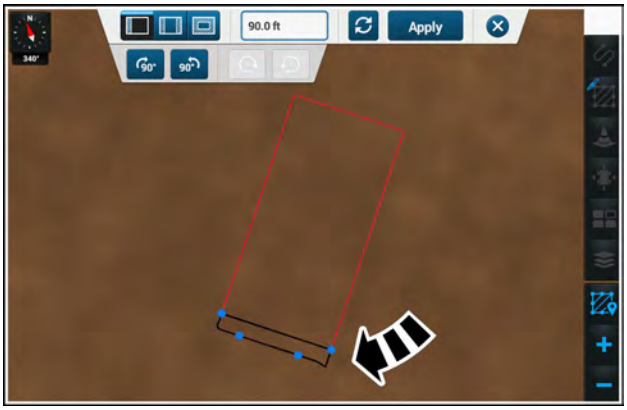
Press the “rotate” button again to rotate **90°** clockwise.



NHPH23PLM0546AA 10

The single headland moves **90°** clockwise again.

Repeat this process until the single headland appears on the correct side of the field.



NHPH23PLM0548AA 11

Edit a single headland

For more precise adjustment, press any of the four plain blue dots **(1)** on the displayed headland.

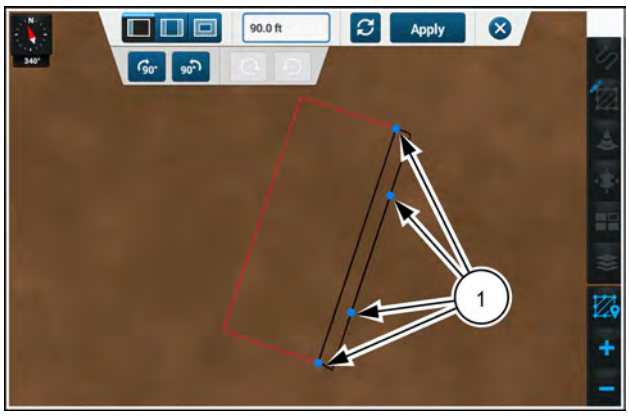
Each headland contains points A, B, A1, and B1.

- Points A1 and B1 **(2)** are the inner edge of the headland that intersects with the field boundary.
- When moving points A1 or B1, the pivot point at which they move is determined by the position of points A and B, respectively.
- Points A and B **(3)** can move to change the pivot point.
- Points A and B cannot move to the same boundary side as A1 and B1, respectively.

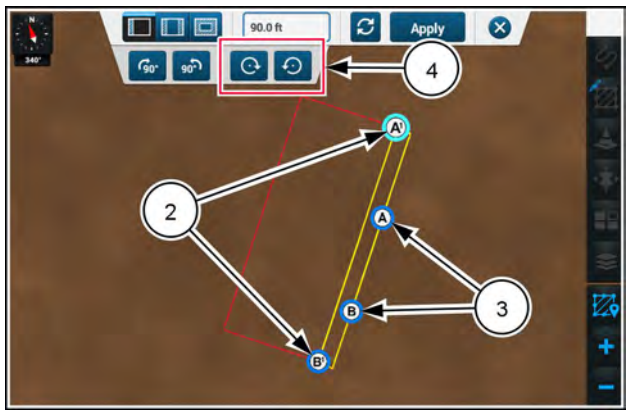
When you select a headland point, the fine adjust buttons **(4)** become available.

This button moves the selected point in small fixed increments clockwise.

This button moves the selected point in small fixed increments counter-clockwise.



NHPH23PLM0546AA 12

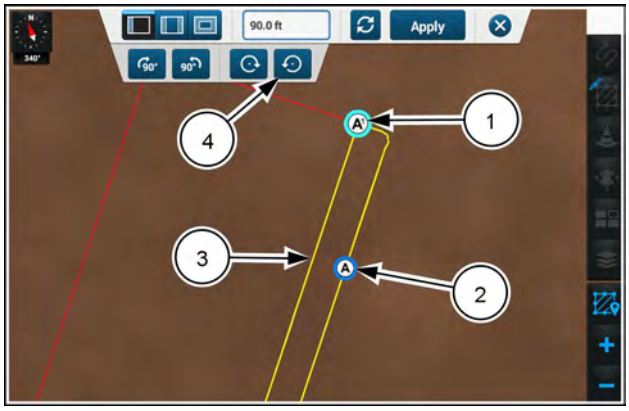


NHPH23PLM0547AA 13

The selected point **(1)** appears larger and with a light blue outline.

You can move the selected point clockwise or counter-clockwise. The point pivots at an imaginary intersection where point A **(2)** meets the inner field boundary **(3)**.

Press the “fine adjust” button **(4)** to move the point counter-clockwise.

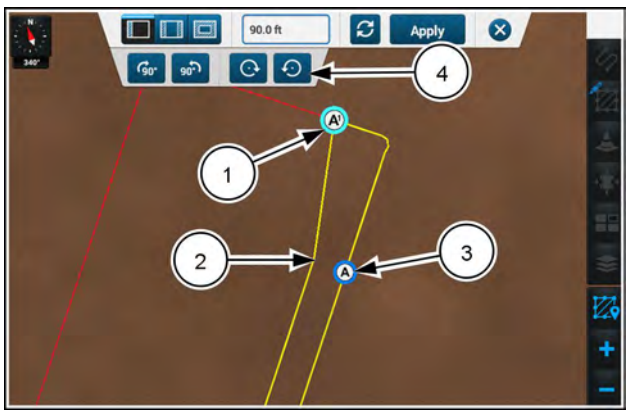


NHPH23PLM0549AA 14

Point A1 **(1)** moves counter-clockwise along the boundary at the designated pivot point **(2)**.

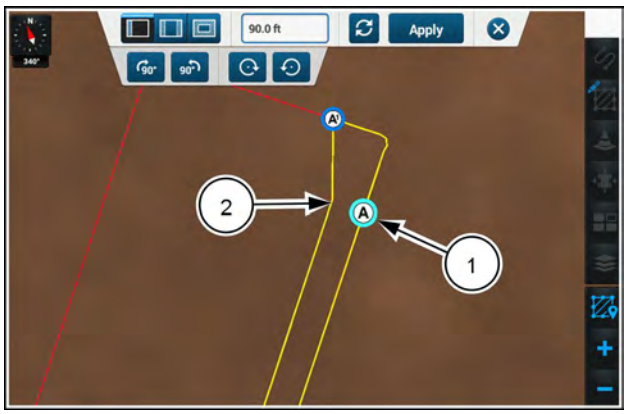
Press point A **(3)** to select that point to change the angle of the new inner boundary line.

Press the “fine adjust” button **(4)** to move the newly selected point counter-clockwise.



NHPH23PLM0550AA 15

Point A **(1)** moves counter-clockwise along the outer boundary and the vertex **(2)** changes for the other point that was previously moved.

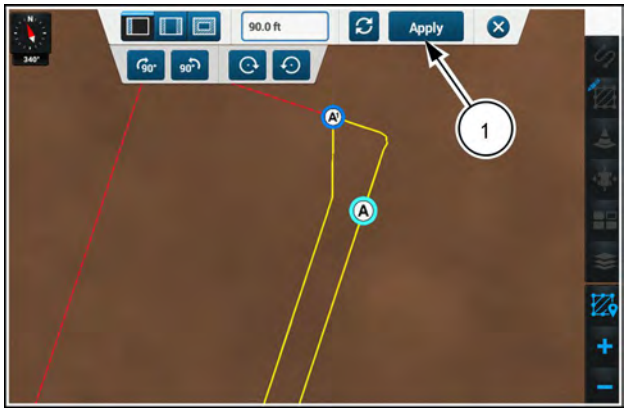


NHPH23PLM0551AA 16

Repeat this process as many times as necessary, on either end of the headland, until you are satisfied with the single headland.

Apply

Press the “Apply” button **(1)** to apply the changes.



NHPH23PLM0551AA 17

A confirmation window appears.

Yes

Press the “Yes” button **(1)** to confirm and apply the headland and exit.

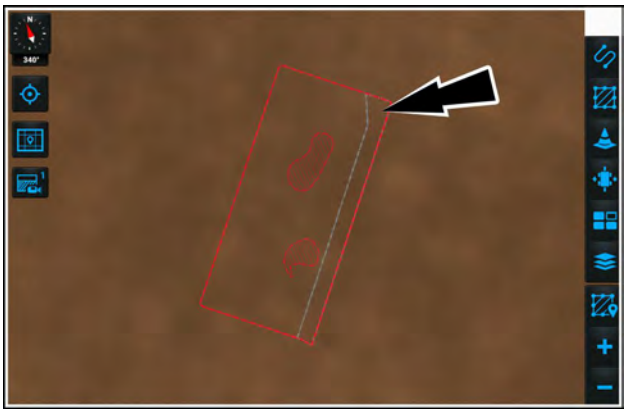
No

Press the “No” button **(2)** to continue editing the headland.

NHPH23PLM0552AA 18

The single headland is now the active headland and displays in white on the map inside of the field boundary.

NOTE: *Rotate headlands before you edit any individual points. If you rotate a headland after you edit the points, all changes to the points are lost. This loss occurs even if you confirmed the headland changes.*



NHPH23PLM0553AA 19

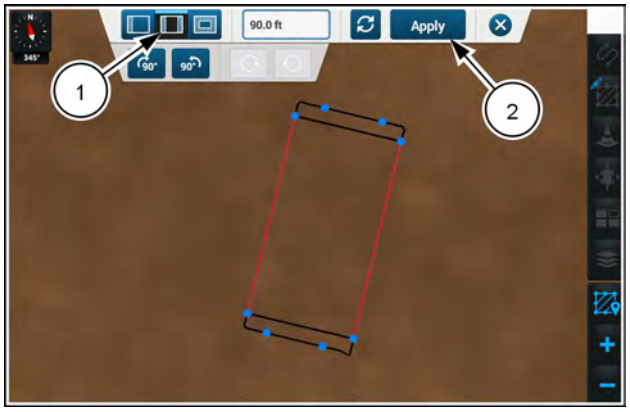
Double headland

To record a headland on opposing sides of the field, select double headland mode. **(1)**.

A headland appears on opposing sides of the field, inside the boundary, offset from the boundary by the default headland width.

NOTE: *If the selected width of the headland is too wide for the field, a message appears informing you that you cannot record the headland. Adjust the headland width as needed to resolve this issue.*

Press the “Apply” button if you are satisfied with the double headland.



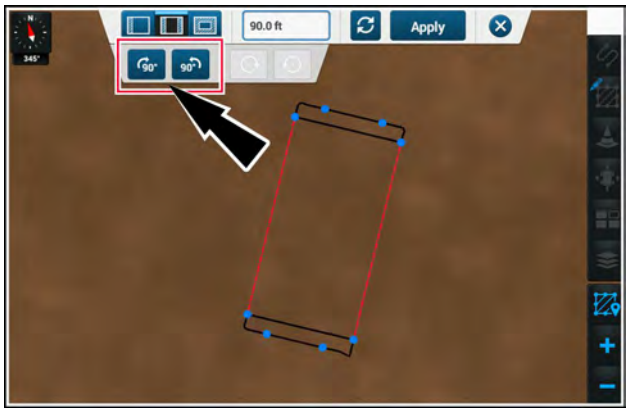
NHPH23PLM0541AA 20

Rotate a double headland

Press either rotate button to move the double headland **90°** in the direction indicated on the button.

This button rotates the double headland **90°** clockwise.

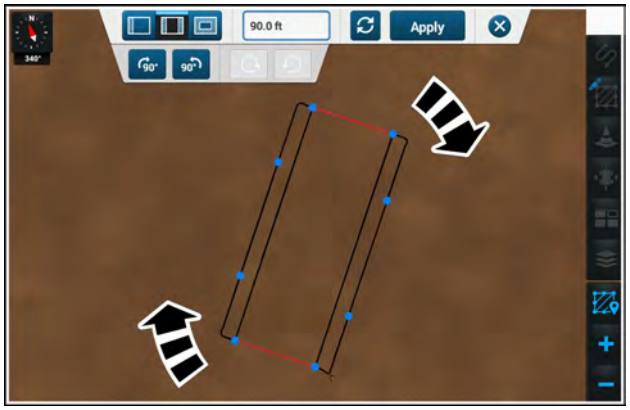
This button rotates the double headland **90°** counter-clockwise.



NHPH23PLM0541AA 21

The double headland moves **90°** clockwise.

Repeat this process until the double headland appears on the correct side of the field.



NHPH23PLM0554AA 22

Edit a double headland

For more precise adjustment, press any of the eight plain blue dots **(1)** on the displayed headland.

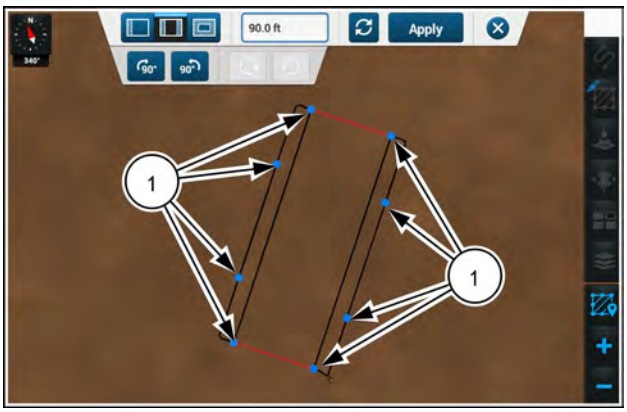
Each headland contains points A, B, A1, and B1.

- Points A1 and B1 **(2)** are the inner edge of the headland that intersects with the field boundary.
- When moving points A1 or B1, the pivot point at which they move is determined by the position of points A and B, respectively.
- Points A and B **(3)** can move to change the pivot point.
- Points A and B cannot move to the same boundary side as A1 and B1, respectively.

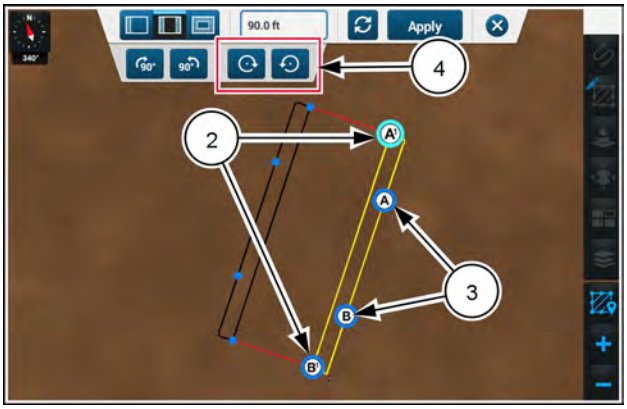
When you select a headland point, the fine adjust buttons **(4)** become available.

This button moves the selected point in small fixed increments clockwise.

This button moves the selected point in small fixed increments counter-clockwise.



NHPH23PLM0554AA 23

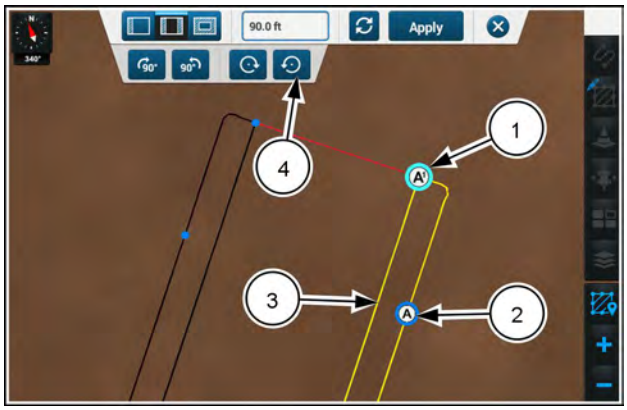


NHPH23PLM0555AA 24

The selected point **(1)** appears larger and with a light blue outline.

You can move the selected point clockwise or counter-clockwise. The point pivots at an imaginary intersection where point A **(2)** meets the inner field boundary **(3)**.

Press the “fine adjust” button **(4)** to move the point counter-clockwise.

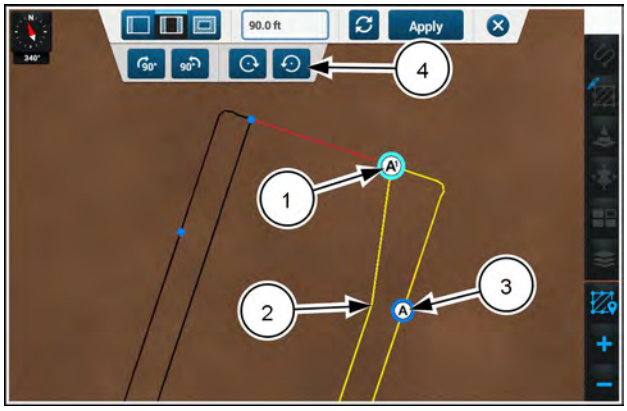


NHPH23PLM0556AA 25

Point A1 **(1)** moves counter-clockwise along the boundary at the designated pivot point **(2)**.

Press point A **(3)** to select that point to change the angle of the new inner boundary line.

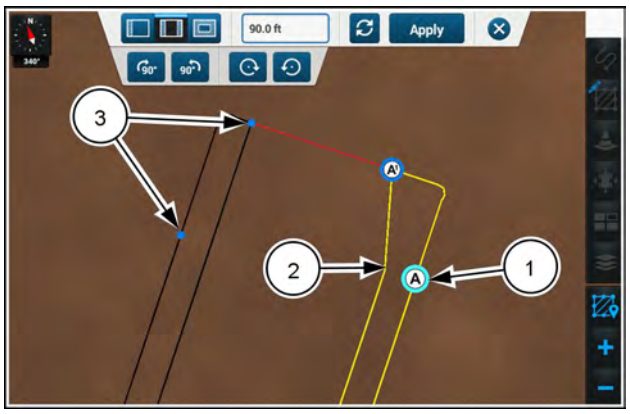
Press the “fine adjust” button **(4)** to move the newly selected point counter-clockwise.



NHPH23PLM0558AA 26

Point A **(1)** moves counter-clockwise along the outer boundary and the vertex **(2)** changes for the other point that was previously moved.

Press any visible blue dot **(3)** on the opposing headland side to edit that side of the headland.

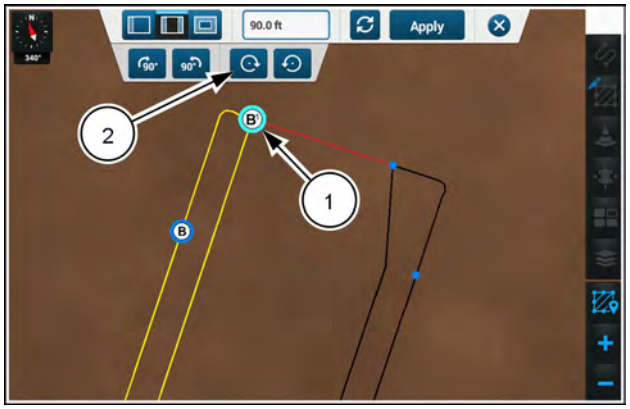


NHPH23PLM0559AA 27

The selected point **(1)** appears larger and with a light blue outline.

The process to edit the opposing side is the same.

Press the “fine adjust” button **(2)** to move the newly selected point clockwise.

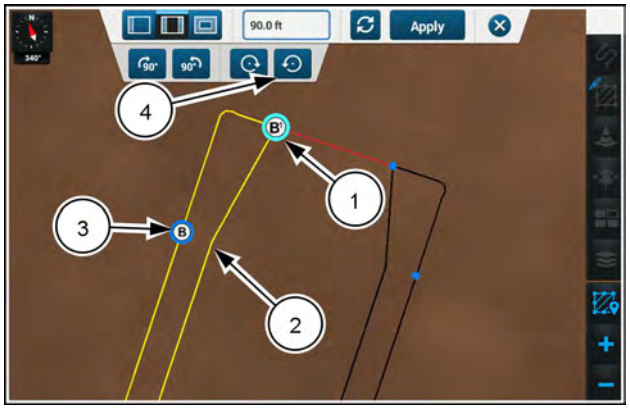


NHPH23PLM0564AA 28

Point B1 **(1)** moves clockwise along the boundary at the designated pivot point **(2)**.

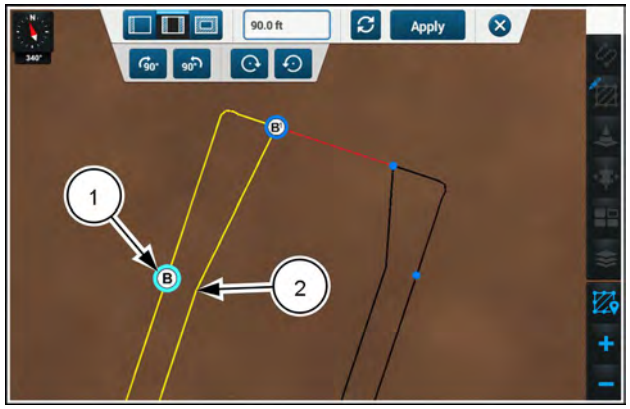
Press point B **(3)** to select that point to change the angle of the new inner boundary line.

Press the “fine adjust” button **(4)** to move the newly selected point counter-clockwise.



NHPH23PLM0560AA 29

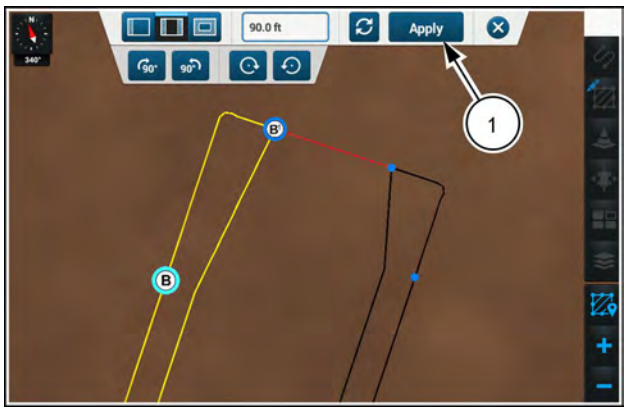
Point B **(1)** moves counter-clockwise along the outer boundary and the vertex changes for the other point that was already moved.



NHPH23PLM0561AA 30

Repeat this process as many times as necessary, on either end or side of the headland, until you are satisfied with the double headland.

Press the “Apply” button **(1)** to apply the changes



NHPH23PLM0561AA 31

A confirmation window appears.

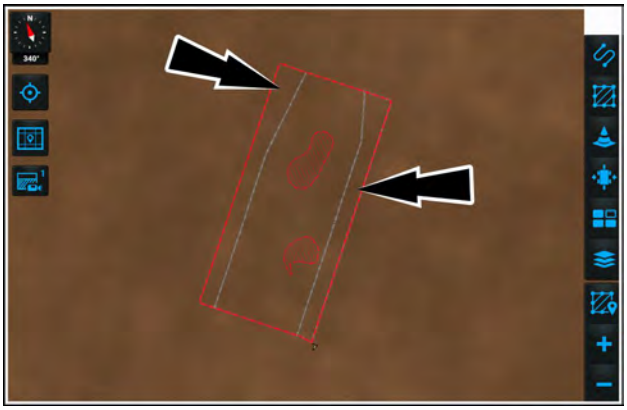
Press the “Yes” button **(1)** to confirm the headland and exit.

Press the “No” button **(2)** to continue editing the headland.

NHPH23PLM0552AA 32

The double headland is now the active headland and displays in white on the map inside of the field boundary.

NOTE: *Rotate headlands before you edit any individual points. If you rotate a headland after you edit the points, all changes to the points are lost. This loss occurs even if you confirmed the headland changes.*



NHPH23PLM0562AA 33

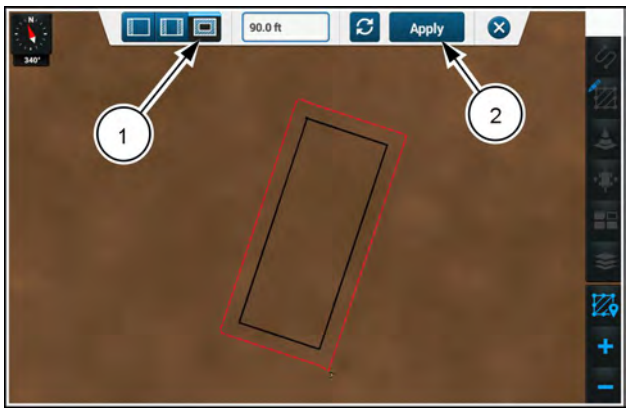
All Headlands

To record a headland on all sides of the field, select all headland mode. **(1)**.

A headland appears on all sides of the field, inside the boundary, offset from the boundary by the default headland width.

There are no options to rotate the headland or adjust the headland points in this mode.

Press the “Apply” button **(2)** to apply the headland.



NHPH23PLM0563AA 34

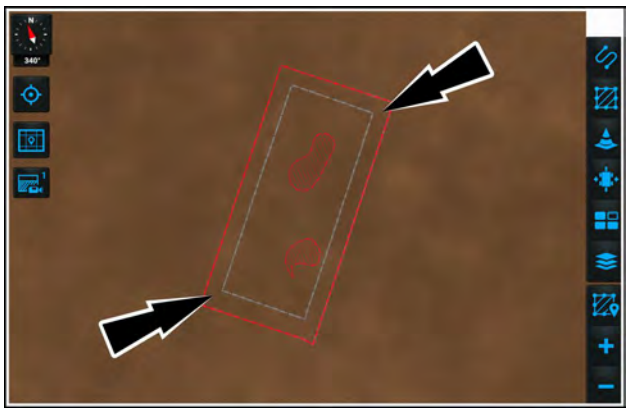
A confirmation window appears.

Press the “Yes” button **(1)** to confirm the headland and exit.

Press the “No” button **(2)** to cancel and return to the headland screen.

NHPH23PLM0552AA 35

A headland on all sides of the field is now the active headland and displays in white on the map inside of the field boundary.



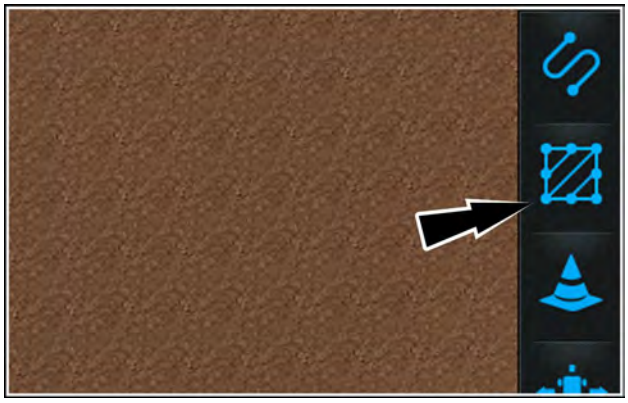
NHPH23PLM0566AA 36

Headland management

To manage headlands, you must enter boundary management. All headlands are assigned to boundaries. Headlands do not exist independently of boundaries.

Use the headland management function to rename, edit, or delete headlands.

In the right-hand menu, press the “Boundary” icon.



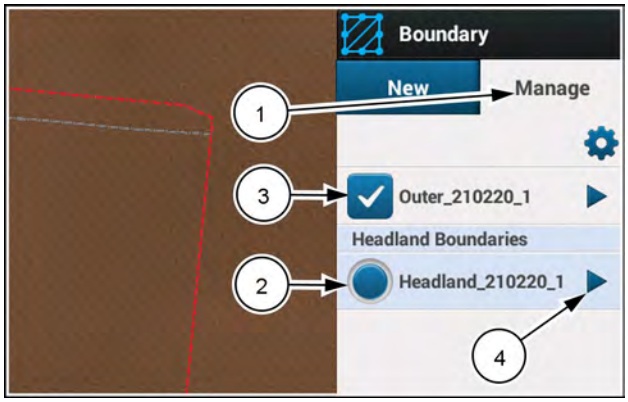
NHIL20PLM0086AA 1

Rename, edit, or delete a headland

The “Boundary” menu appears. Press the “Manage” tab **(1)**.

NOTE: *If your vehicle has dual displays, pressing the “Manage” tab in a display disables the “Boundary” icon in the other display.*

Any existing headlands **(2)** will appear below their assigned boundary **(3)**. If multiple headlands exist, then a selected radio button appears next to the default headland. Press a desired radio button to select another headland.



NHIL20PLM0106AA 2

The selected boundary and headland appear in the map.

To edit a headland, press the “Arrow” button **(4)** next to the headland you wish to edit.

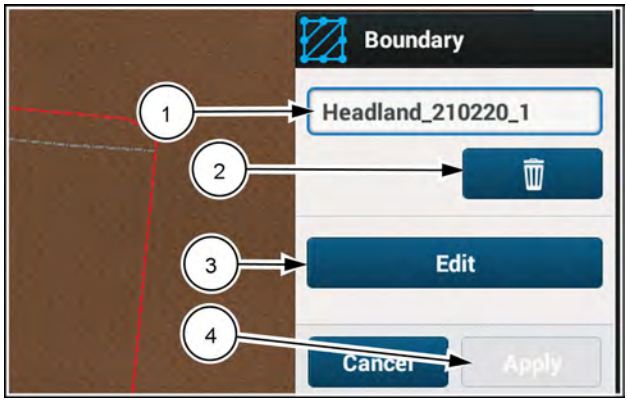
The “Headland Edit” menu appears. The selected headland appears in the map.

Press the box **(1)** to edit the headland name.

Press the “delete” button **(2)** to delete the headland. A delete boundary confirmation prompt appears.

Press the “Edit” button **(3)** to open the edit panel for the selected headland. The edit panel contains the same headland-editing capabilities as outlined in “Headland creation” (**5-9**).

If you have made changes, the “Apply” button activates. To apply your changes, press the “Apply” button **(4)**.

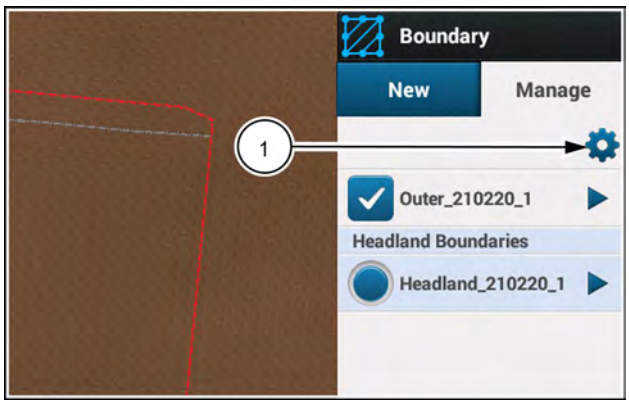


NHIL20PLM0107AA 3

Headland Boundary Control

NOTE: *After you record new headlands, the "Headland Boundary Control" section does not appear until after you cycle the key OFF and then ON.*

Press the "Gear" icon **(1)** in the upper-right-hand corner of the boundary "Manage" tab. The "Global Settings" window appears.

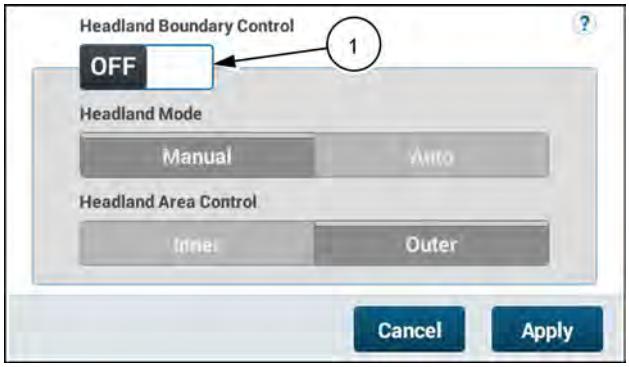


NHIL20PLM0106AA 4

Use the "Headland Boundary Control" ON/OFF switch **(1)** to activate or deactivate headland boundary control for product application.

Use headland boundary control to control product application when crossing into the headland. When headland boundary control is OFF, product will continue to be applied on both sides of the headland boundary.

NOTE: *The "Headland Mode" control is inactive unless configuring a field swath. See "Field swath" (**5-58**) for information about field swaths.*



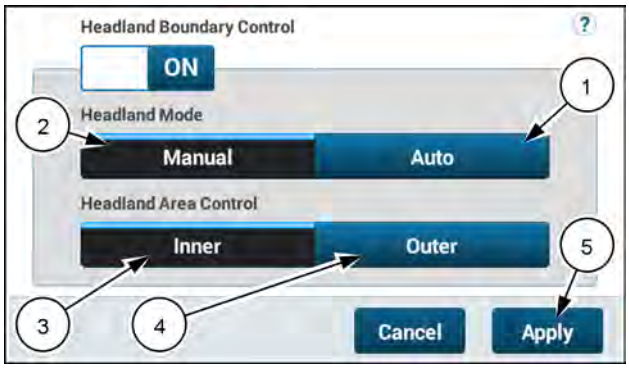
RAPH22PLM1788AA 5

Set the headland mode to "Manual" or "Auto":

- When "Auto" **(1)** is selected, the active area is based on the selected mode of the field swath.

  NOTE: *When "Auto" is selected, the "Headland Area Control" toggle beneath it is inactive.*

- When "Manual" **(2)** is selected, the active area is determined by the operator using the headland area control option outlined below.



RAPH22PLM1787AA 6

Press the "Manual" button to manually configure headland boundary control.

- When "Inner" **(3)** is selected, the active area is the inner part of the field that is not part of the headland area defined by the headland boundary. Product will only be applied to the inner part of the field and will stop applying at the headland boundary.
- When "Outer" **(4)** is selected, the active area in the headland area is defined by the headland boundary. Product will only be applied to the headland area and will stop applying at the headland boundary.

Press the "Apply" button **(5)** to save your changes.

Press the "Cancel" button to discard your changes.

Swath creation

Recording new swaths

The autoguidance system steers the vehicle along recorded paths known as “swaths.” You need to record swaths using methods that differ based upon the type of swath you wish to use for your field operations.

The "Swath" menu contains two tabs:

- New – The "New" tab has controls for creating a new swath.
- Manage – The "Manage" tab has controls for managing previously-created swaths.

The "New" tab is the default tab that open when you open the "Swath" menu.

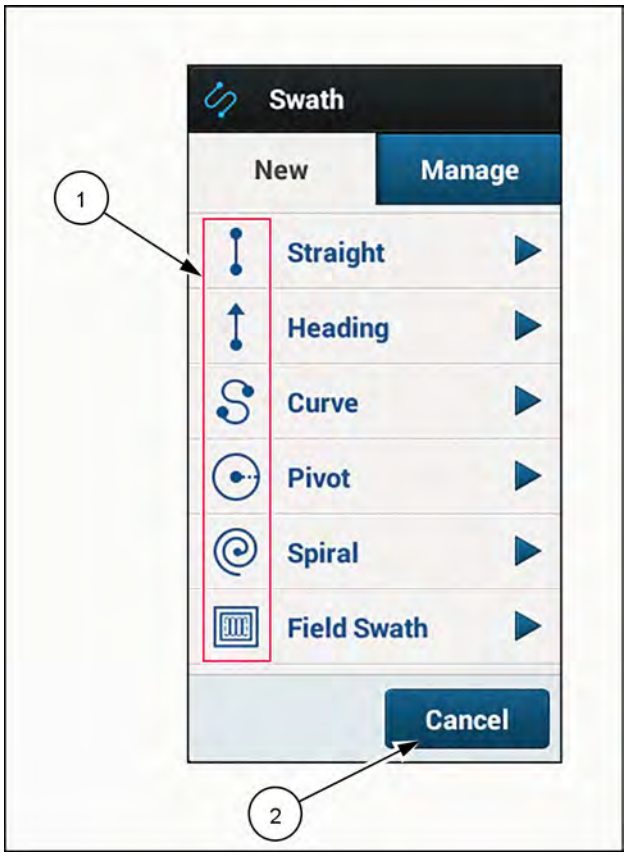
The "Swath" menu “Manage” tab is not available while the autoguidance is engaged. While the autoguidance is engaged, the "Swath" icon appears in the disabled state. As soon as you disengage the auto guidance, the "Swath" menu becomes available.

The "New" tab lists the following swath types **(1)**:

- Straight
- Heading
- Curve
- Pivot
- Spiral
- Field Swath
- Multi Swath

NOTE: *Swipe up to scroll down and access Multi Swath.*

The "New" tab includes a "Cancel" button **(2)**. Press the "Cancel" button if you wish to cancel the creation of a new swath.



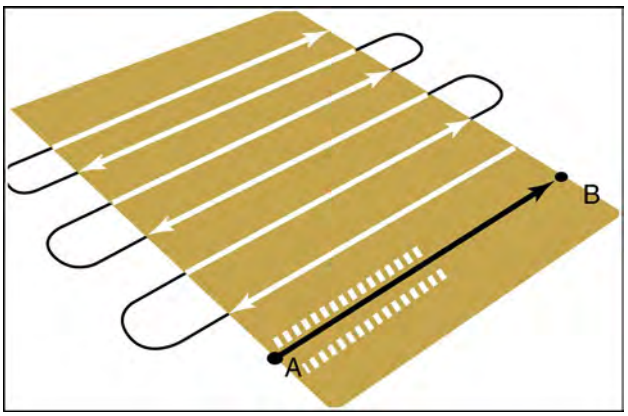
RAPH23PLM1186BA 1

Straight swath

A straight swath defines the straight pass pattern for a field or field section.

There are two ways to create a straight swath:

- Drive the vehicle to a logical point in the field and press the “A” button. Then drive to another point in the field and press the “B” button. At which end of the field the swath is started or how straight an operator drives between the two points is not important. The software draws a straight line across points A and B. Other swath lines appear parallel to the A-B line.
- Enter known GPS coordinates in decimal degrees for the “A” and “B” points using the “Enter A” and “Enter B” buttons.

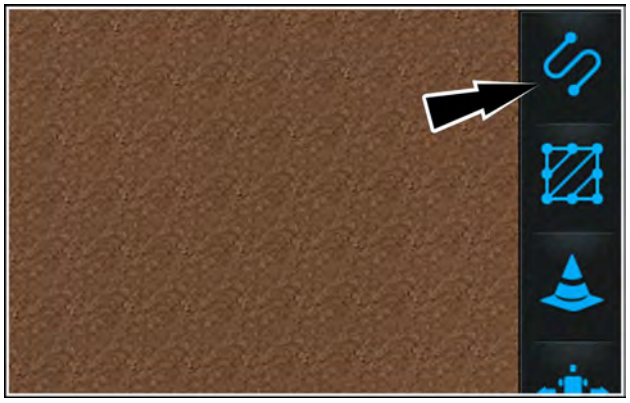


RCPH09DSP016BBG 1

Using the GPS coordinates for the “A” and “B” points, the autoguidance system creates a straight swath that is automatically stored and linked to the current field. The system then generates parallel swaths based upon the recorded swath and the configured implement width. The system performs all automated steering in subsequent field passes in parallel to this defined straight swath whenever this swath is selected.

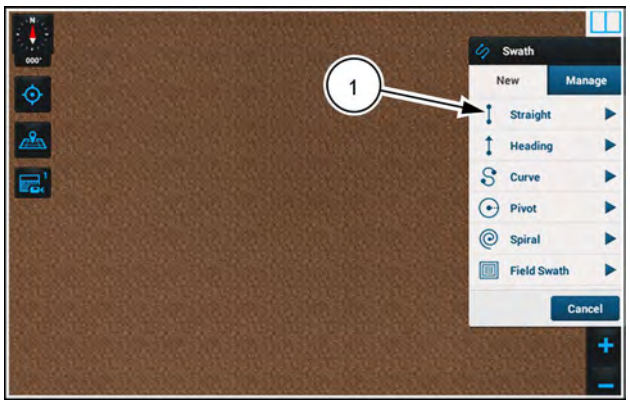
Record a straight swath using A/B markers

In the right-hand menu, press the “Swath” icon.



NHIL20PLM0086AA 2

Press the “Straight” swath selection **(1)**. The “Straight” recording dialog appears.



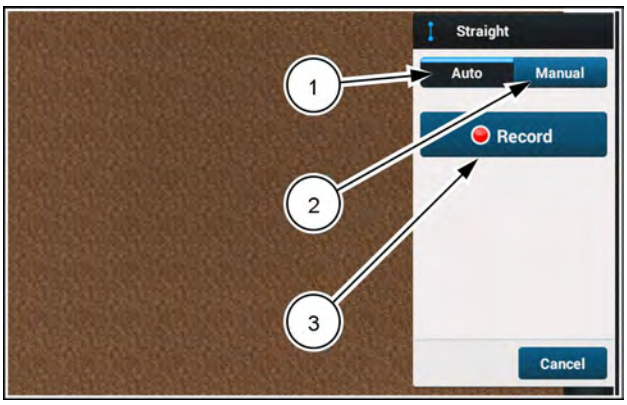
RAPH22PLM1789AA 3

Two options are available when recording a straight swath:

- Press the “Auto” button **(1)** to record your A/B points by driving the vehicle.
- Press the “Manual” button **(2)** to define your A/B points with latitude and longitude coordinates.

NOTE: *The default selection is “Auto”.*

To record a straight swath in “Auto” mode, press the “Record” button **(3)**. The edit panel for straight swath recording appears.

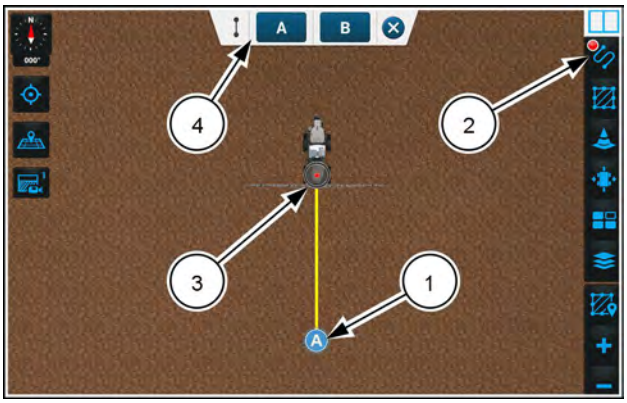


RAPH22PLM1790AA 4

Press the “A” button to record the beginning of the swath line. Drive the vehicle in the direction of the intended swath. The following actions occur:

RAIL18PLM1532AA 5

- Point “A” **(1)** appears at the beginning of the swath line.
- A recording indicator **(2)** appears in the top-left corner of the “Swath” button in the right-hand menu.
- The recording point indicator **(3)** on the vehicle flashes red.
- The edit panel with the A/B swath type options **(4)** appears at the top of the map window.



RAPH22PLM1791AA 6

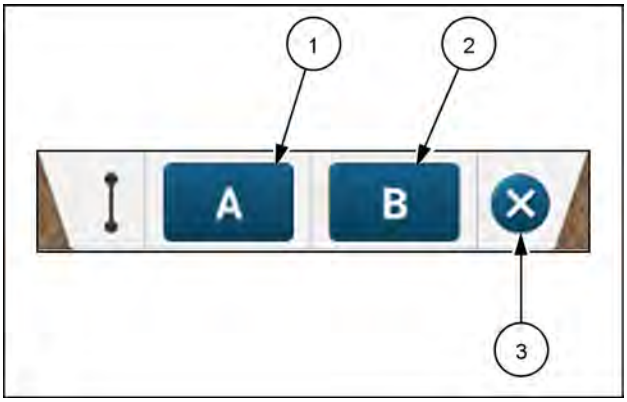
The edit panel for straight swath recording consists of the following items:

Press the “A” button **(1)** to establish a new location for point A in your swath recording session once the original point A has dropped from the bottom of the map.

Press the “B” button **(2)** to establish point B.

NOTE: *The “B” button is disabled until you drive **3 m** (**10 ft**) away from point A.*

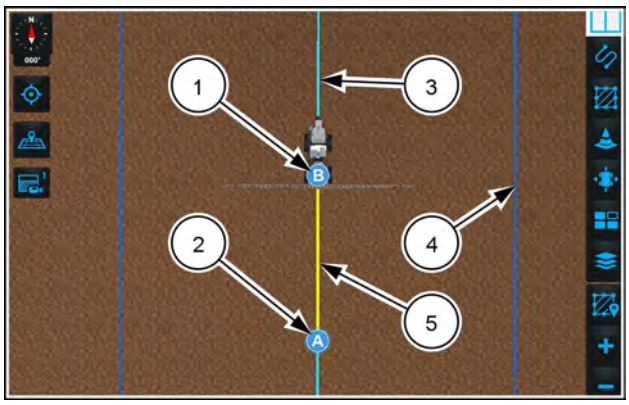
Press the “close” button **(3)** to cancel the recording.



RAIL18PLM1533AA 7

After you establish point B **(1)**, the recording of a straight swath is completed and the following actions occur:

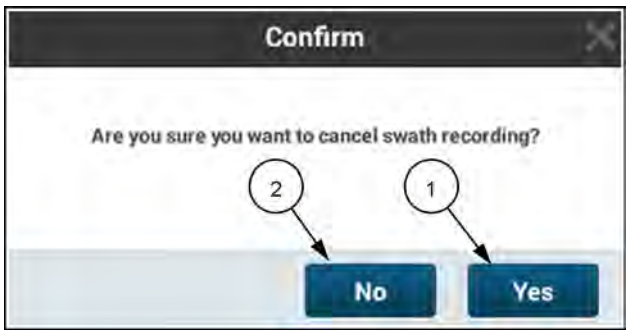
- The edit panel closes by sliding back up.
- The recording indicator from the “Swath” button in the right-hand menu disappears.
- The new straight swath maintains the A point marker **(2)** and B point marker **(1)** and is automatically assigned a name. By default the swath name is in the format Swath Type_Date_number.
- The new straight swath **(3)** is now the active swath. Guidance lines **(4)** are visibly projected on the display in either direction within **8 km** (**5 miles**), or until the current field boundary has been filled when a boundary is available.
- The A point marker **(2)** and B point marker **(1)** remain visible for as long as the original swath **(5)** is the active swath.
- Guidance lines **(4)** project in either direction separated by one swath width.



RAPH22PLM1792AA 8

If you choose to cancel the straight swath recording by pressing on the “close” button in the edit panel, a cancel dialog appears asking you to confirm the cancellation of the recording. Press the “Yes” button **(1)**. The cancellation dialog closes and any A/B points placed on the map disappear. The edit panel closes by sliding back up. The recording icon on the swath menu button disappears.

Press the “No” button **(2)** to close the cancellation dialog. Recording continues.

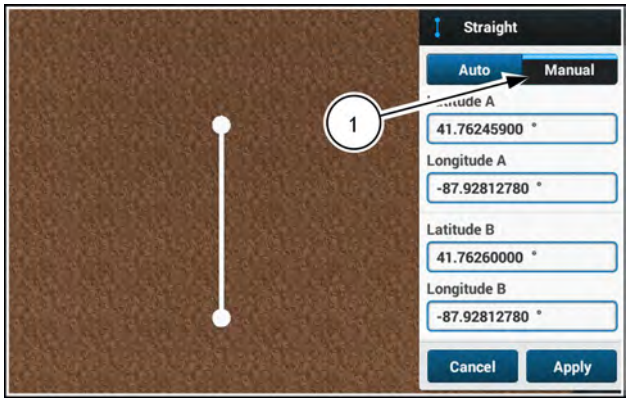


RAIL18PLM1540AA 9

Recording a straight swath using coordinates

Press the “Manual” tab **(1)** to define a straight swath manually.

When creating a straight swath manually, enter the latitude and longitude manually of both the A point and the B point. You can enter the latitude and longitude coordinates with up to seven decimal places.



RAPH22PLM1794AA 10

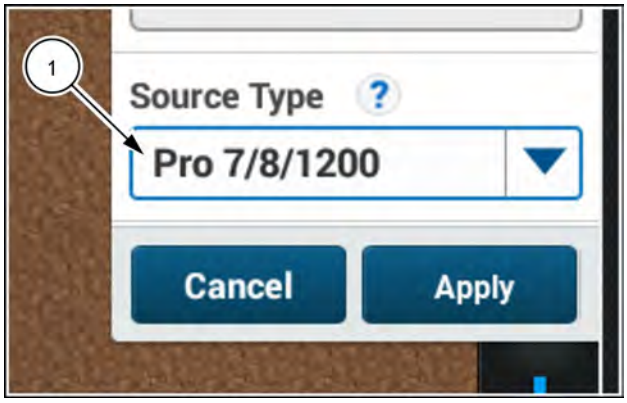
Different guidance systems use slightly different methods for generating straight swaths. The system can assign a “source” that determines how the display generates the swath.

Swipe up on the swath creation window to access the “Source Type” menu **(1)**.

Press the menu and select the desired swath creation method.

- If you select “Pro 7/8/1200” option, then the system will generate the straight swath using the traditional CASE IH method.
- If you select the “Non-Pro 7/8/1200 1” option, then the system will generate the straight swath as an approximation of a **Trimble®** A-B line.
- If you select the “Non-Pro 7/8/1200 2” option, then the system will generate the straight swath as an approximation of a **John Deere™** A-B line.

NOTE: *If you incorrectly assign the source type at the time of swath creation, you can change the source type afterward. See “Edit straight swath” (**5-87**).*

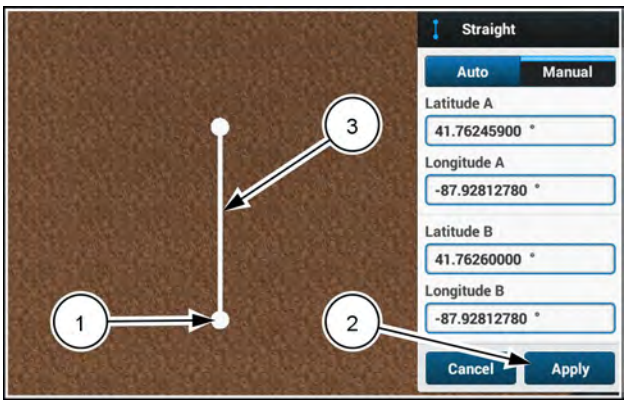


NHIL20PLM0014AA 11

As soon as you enter both the latitude and longitude of point A, point A appears on the map as a white dot **(1)**. You can zoom the map out if needed to display both point A and the vehicle current position. The “Apply” button **(2)** becomes available after you enter all of the inputs.

After you enter the latitude and longitude coordinates of point B, the swath appears as a white line segment **(3)** connecting points A and B. The map zooms out as needed to show both points A and B, as well as the vehicle position.

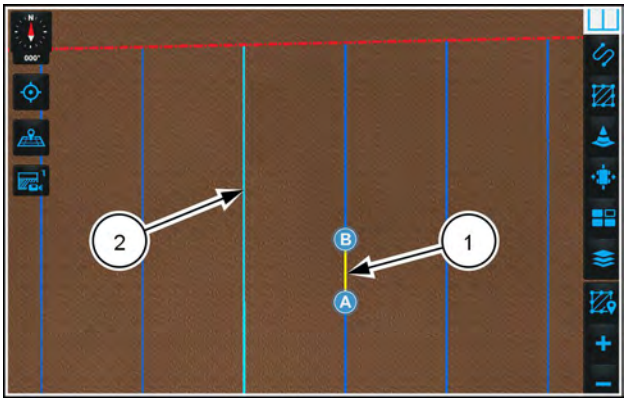
If the coordinates are not valid, then error indicators appear displayed by the corresponding input field.



RAPH22PLM1794AA 12

To complete the process of creating the swath, press the “Apply” button. The following actions occur when you press the “Apply” button:

- The new straight swath appears **(1)**. The color of the swath on the map changes to yellow.
- The swath maintains the point A marker and the point B marker. The swath is automatically assigned a name. By default, the swath name is in the format Swath Type_Date_#.
- The guidance line nearest the vehicle **(2)** becomes the active swath. Guidance lines are visibly projected on the display in either direction within **8 km** (**5 miles**), or until the current field boundary has been filled when a boundary is available.



RAPH22PLM1795AA 13

Heading swath

A heading swath is a straight swath that is defined by entering a vehicle heading within **360°** of the direction of travel:

- **0°** – Due north
- **90°** – Due east
- **180°** – Due south
- **270°** – Due west

Up to four decimal places are supported for heading accuracy.

A heading swath is appropriate when the desired direction for the swath pattern is known, and you want to set the direction exactly without driving the swath. The swath direction may be known if one or both of the following information items is known:

- If the field has been surveyed accurately
- If the new swath will use the same heading as another recorded swath

In the right-hand menu, press the “Swath” icon.

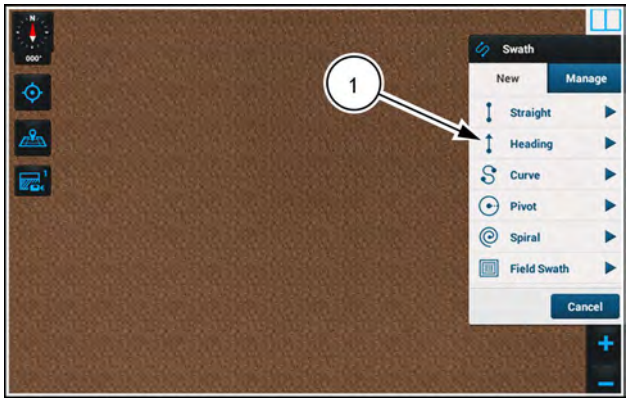
NHIL20PLM0086AA 1

Press the “Heading” swath selection **(1)**. The “Heading” recording dialog appears.

There are three ways to create a heading swath:

- Move the needle within the interactive heading compass, using the current position of the vehicle as the origin of the swath.

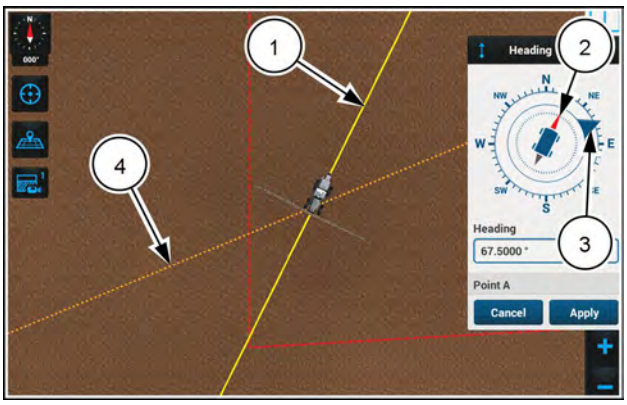
  NOTE: *You can move the needle within the interactive heading compass by either the drag/drop method or pressing the desired point on the compass. The needle moves in* ***22.5°*** *increments.*
- Manually define the heading, using the current position of the vehicle as the origin of the swath. You can enter the heading with an accuracy up to four decimal places.
- Manually define the latitude and longitude coordinates of the origin of the swath. Then establish the heading using the interactive compass or by entering the heading manually.



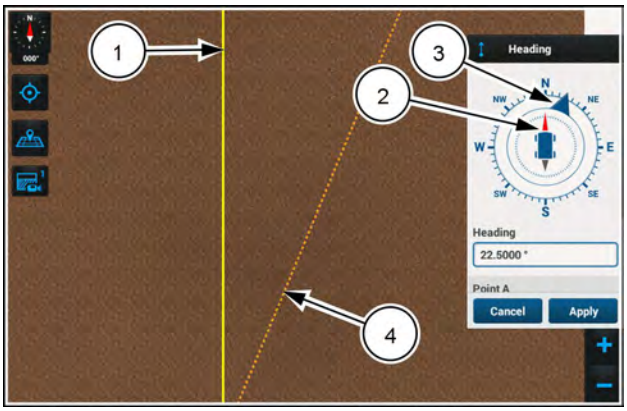
RAPH22PLM1789AA 2

Within the interactive heading compass, the vehicle dynamic icon **(2)** in the center shows the current heading of the vehicle. This is the default heading. The yellow line in the map **(1)** illustrates the vehicle heading.

Drag the blue outside needle **(3)** to move it around the compass to choose a new heading. You can also press around the compass. The blue needle **(3)** jumps to the position of the press. The orange dotted line in the map **(4)** indicates the path of the currently selected heading.

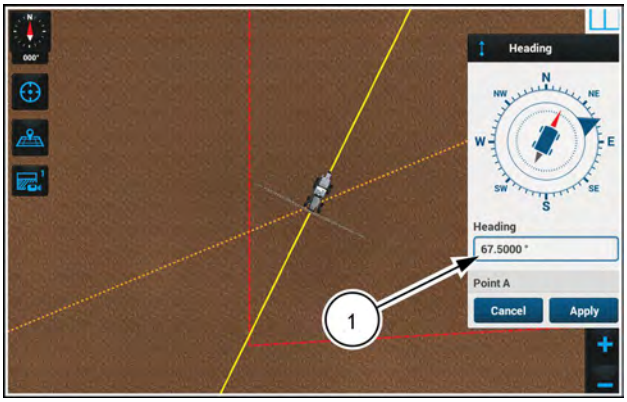


RAPH22PLM1800AA 3

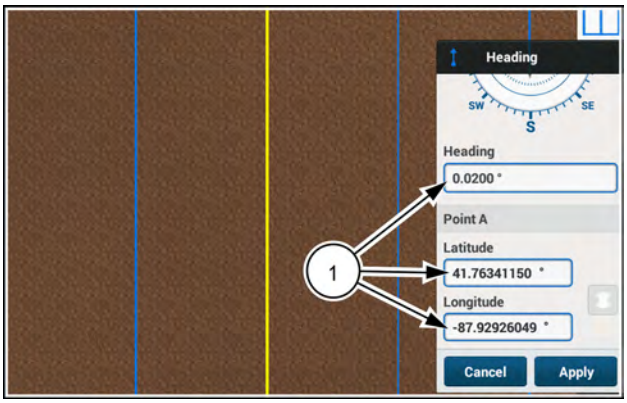


NHPH24PLM0149AA 4

Use the input field **(1)** to obtain a precise heading and starting point (latitude and longitude). When you enter a new heading using the input field, the orange dotted line moves to the selected heading. This helps you to visualize the change you intend to make.



RAPH22PLM1800AA 5



NHIL22PLM0464BA 6

After you manually enter latitude and longitude coordinates of the origin of the swath, you can adjust the coordinates to the current position of the vehicle by driving the vehicle to a new location. This provides a method to fine tune the coordinates.

Enter the known latitude and longitude coordinates into the applicable fields.

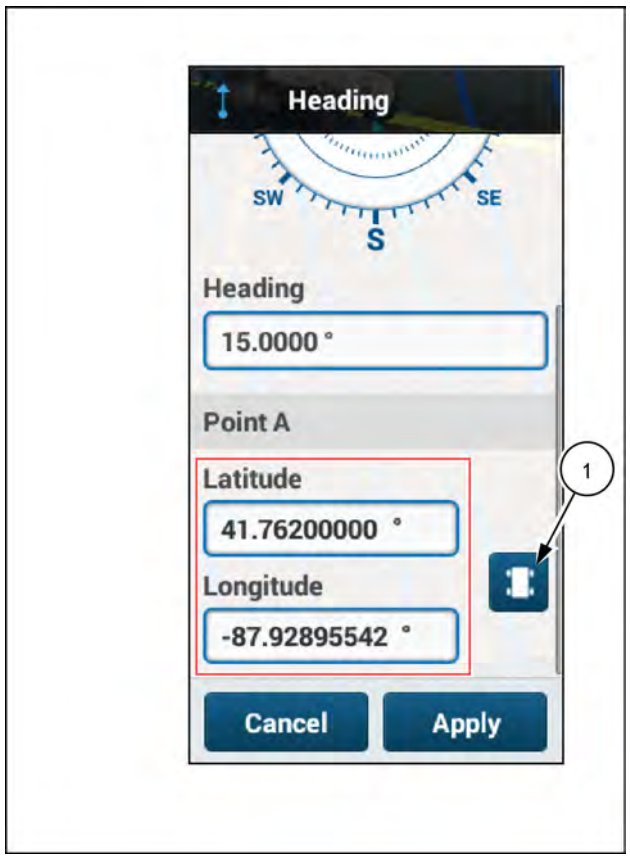
Drive the vehicle to the exact location for the origin of the swath. The set-to-current button **(1)** becomes active once you move the vehicle.

NOTE: *You must manually enter new latitude and longitude coordinates and then move the vehicle to activate the set-to-current button.*

Stop the vehicle on the desired exact location of the swath origin.

Press the set-to-current button. The “Latitude” and “Longitude” fields update to the exact location of the vehicle.

Establish the desired heading using the compass arrow or by manually entering it into the “Heading” field.

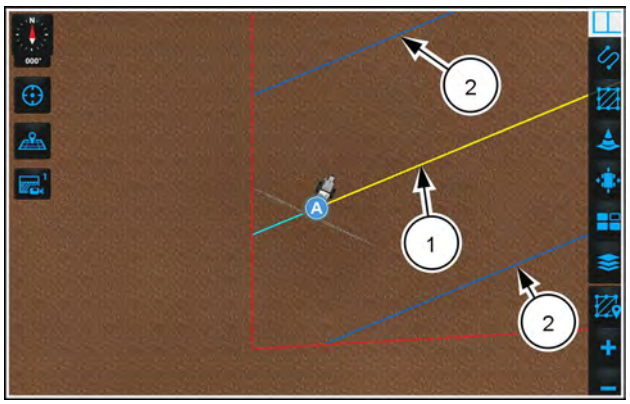


RAPH22PLM0922BA 7

Both the heading input field and the compass automatically update with the user input no matter which of the two heading selection methods you use.

Once a desired heading is selected, press the apply button to generate the heading swath. The following actions then occur:

- The heading menu closes.
- The new heading swath is assigned a name automatically. By default the format of the swath name is Swath Type_Date_Number.
- The new heading swath becomes the active swath **(1)**. Guidance lines **(2)** appear on the display. Guidance lines project in either direction by swath width.



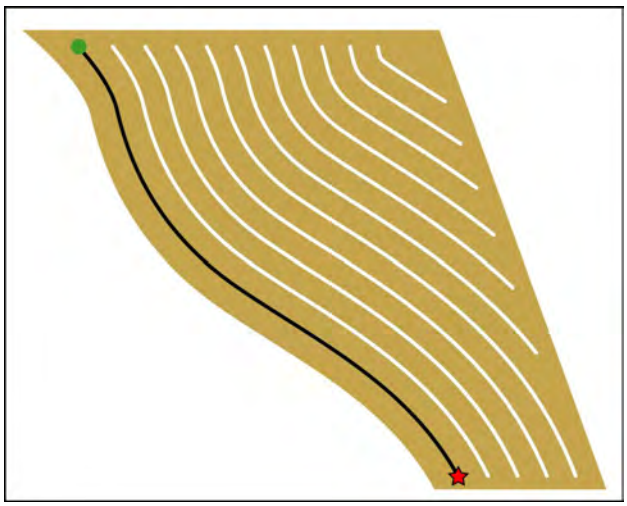
RAPH22PLM1801AA 8

Curve swath

A curve swath defines the curved pass pattern for a field or field section.

To create a curve swath:

- Drive the vehicle to a logical point in the field
- Press the “Start” button (green dot)
- Drive a curved path in the field
- Press the “Stop” button (red star)



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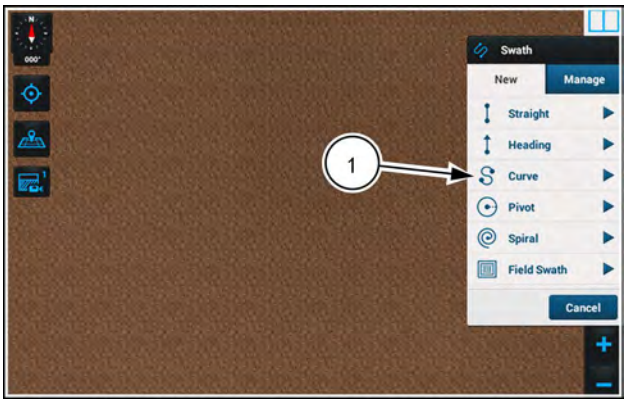
In the right-hand menu, press the “Swath” icon.

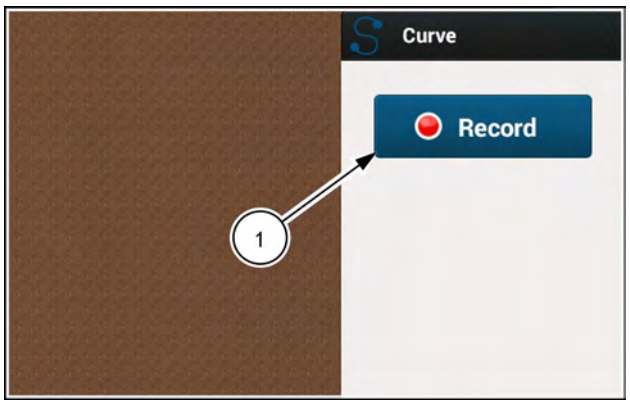
NHIL20PLM0086AA 2

Press the “Curve” swath selection **(1)**. The “Curve” menu appears.



RAPH22PLM1789AA 3

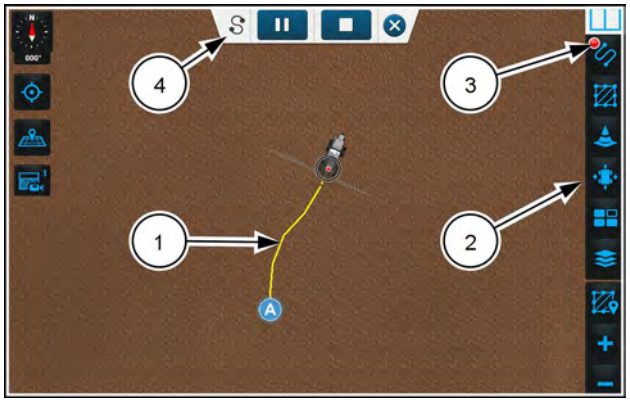
A curve swath can only be auto recorded. Press the “Record” button **(1)**, and then drive the vehicle along the desired curved path.



NHIL20PLM0121AA 4

The following actions occur:

- A yellow swath line **(1)** starts following the vehicle.
- The curved swath menu closes.
- The right-hand menu **(2)** reappears as soon as the curved swath menu finishes closing.
- A recording indicator **(3)** appears in the top - left corner of the “Swath” icon in the right-hand menu.
- The recording menu with the curve swath options **(4)** appears at the top of the map.



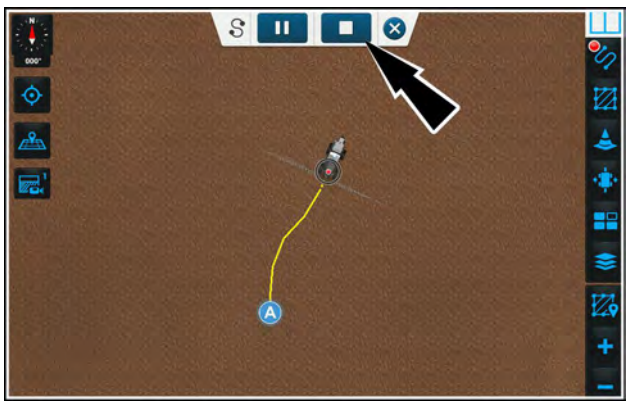
RAPH22PLM1802AA 5

The curved swath edit panel contains the following items:

- Press the button **(1)** to pause/resume the recording.
- Press the button **(2)** to stop the recording.
- Press the “close” button **(3)** to cancel the recording.

RAIL18PLM0059AA 6

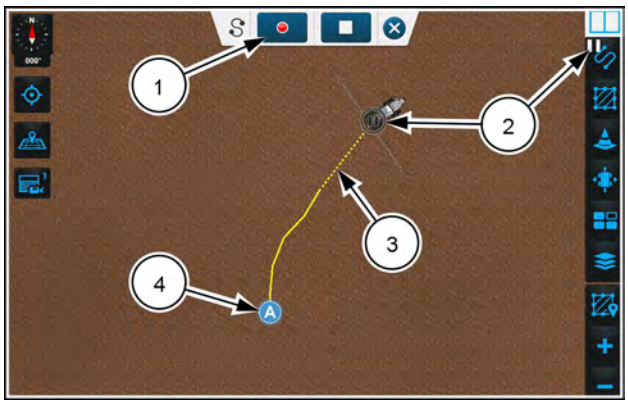
When you begin recording a curved swath, the “Stop” button activates after the vehicle drives **3 m** (**10 ft**) away from point A in the curved swath edit panel.



RAPH22PLM1802AA 7

When you use pause/resume in the curved swath edit panel, the following actions occur:

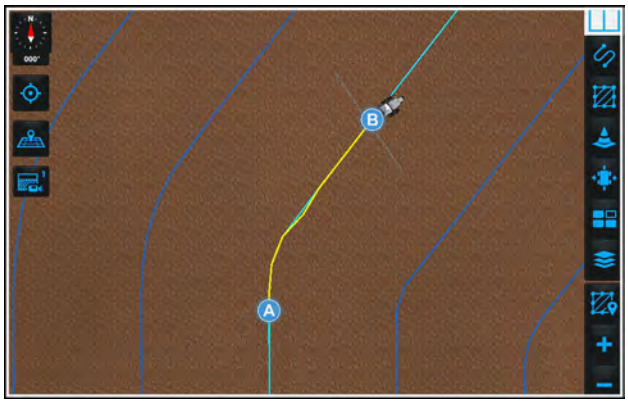
- The recording indicator on the vehicle or attachment updates to show pause/record status.
- The “Pause” button in the edit panel changes to a “Record” button **(1)** when paused. The “Pause/Record” button toggles between “Pause” and “Record” every time you press it.
- “Paused” icons appear on the recording point and on the “Swath” icon **(2)**.
- Point A **(4)** appears where recording begins.
- If you continue to move down the field while paused, a yellow segmented line **(3)** links the last recorded point from the swath line to the recording point on the vehicle or attachment. This line does not follow a recorded path. It only links a straight segmented line from the last recorded point to the current position of the recording point on the vehicle or attachment.
- To resume to a recording, press the “Record” button **(1)** on the edit panel. The yellow-segmented line that links the last recorded point to the current position of the recording point on the attachment or vehicle changes to the regular swath line. The “Pause” icon on the recording point on the vehicle or attachment changes back to a “Recording” indicator.



RAPH22PLM1803AA 8

Finish recording by pressing on the “Stop” button. The following actions occur:

- The edit panel closes by sliding up out of view.
- The recording indicator on the “Swath” button in the right-hand menu disappears.
- The new curve swath is automatically assigned a name. The default is in the format Swath Type_Date_Number.
- The new curve swath becomes the active swath. Guidance lines appear in either direction within **8 km** (**5 miles**), or until the current field boundary has been filled when a boundary is available.
- Guidance lines appear in either direction by swath width.



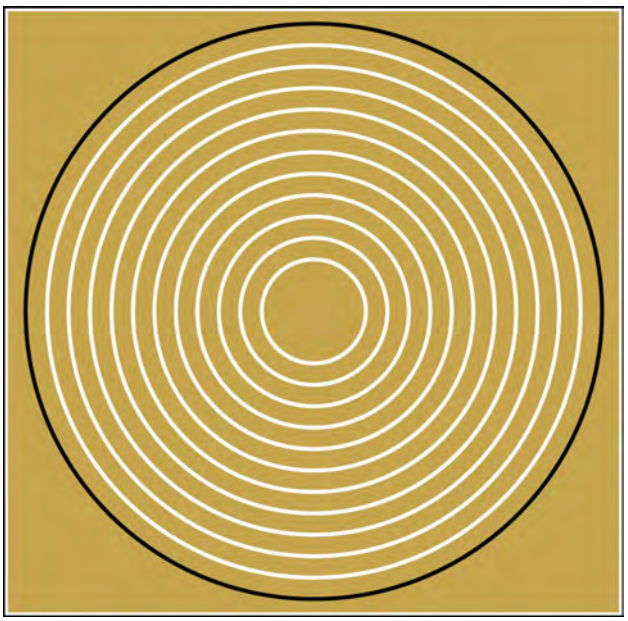
RAPH22PLM1804AA 9

Cancel the curve swath recording by pressing on the “close” button on the edit panel. A confirmation dialog appears asking you to confirm the cancellation of the recording. If you press the “Yes” button **(1)**, the dialog closes and any points placed on the map disappear. The edit panel closes by sliding back up. The recording icon on the swath menu button also disappears. If you press the 'No' button **(2)**, the confirmation dialog closes and recording continues.

RAIL18PLM1540AA 10

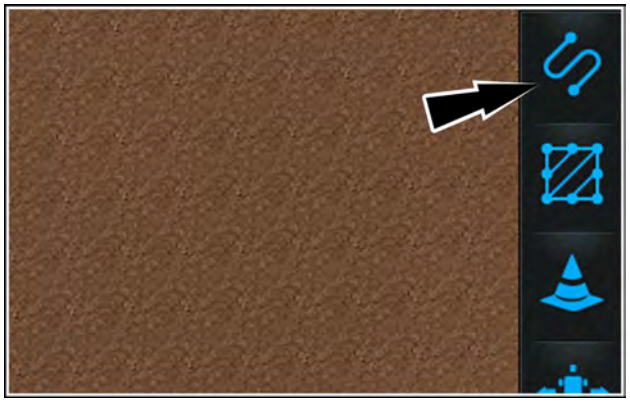
Pivot swath

The pivot swath is primarily intended for fields or field sections where irrigation systems control crop placement, but a pivot swath can be used anywhere that a circular swath pattern is desirable.



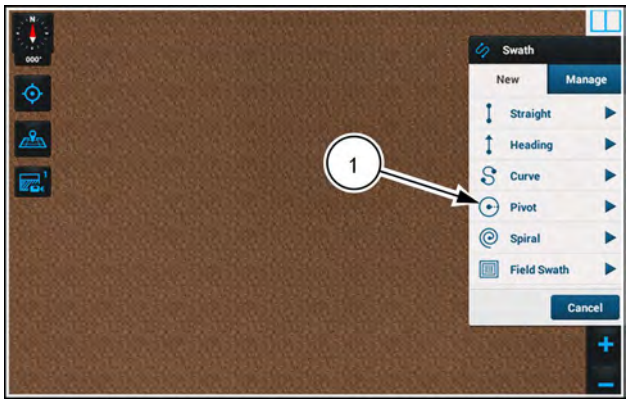
RCPH09DSP086BBG 1

In the right-hand menu, press the “Swath” icon.



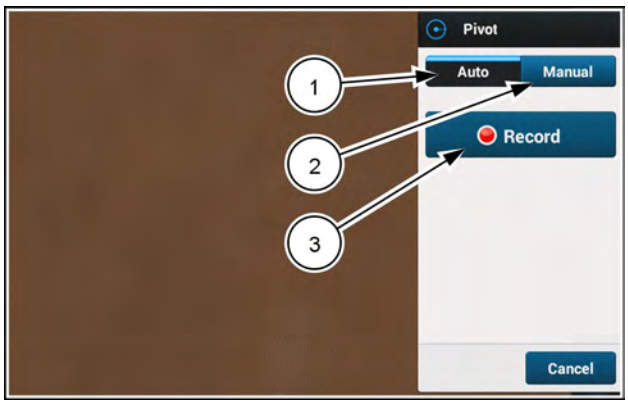
NHIL20PLM0086AA 2

Press the “Pivot” swath selection **(1)**. The “Pivot” menu appears.



RAPH22PLM1789AA 3

When recording a pivot swath, you select either “Auto” **(1)** or “Manual” **(2)** recording from the toggle button. “Auto” is selected by default.



RAPH22PLM1808AA 4

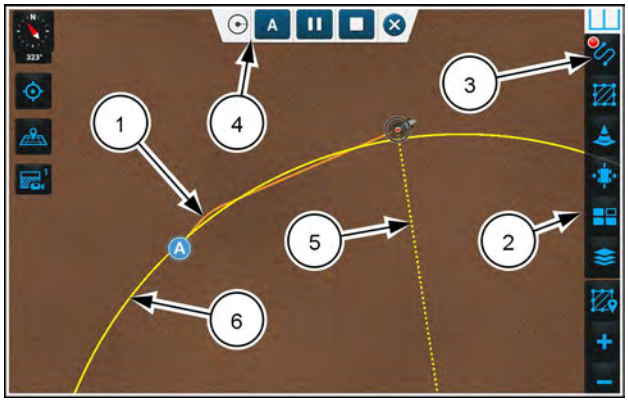
Auto mode

With “Auto” mode selected in the “Pivot” menu, press the “Record” button **(3)**. Drive the vehicle along the desired circular path.

The following actions occur:

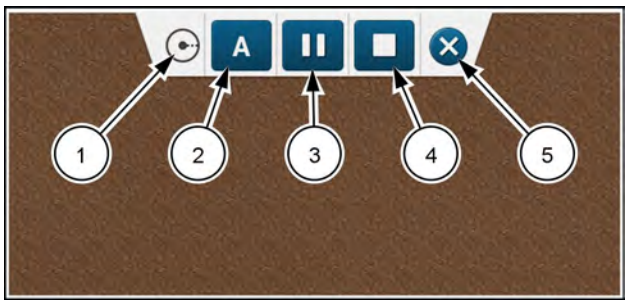
- Point A, which is the starting point, appears in the map immediately at the position of the vehicle. An orange driven line **(1)** starts following the vehicle.
- The “Pivot” menu closes.
- The right-hand menu **(2)** reappears as soon as the “Pivot” menu finishes closing.
- A recording indicator **(3)** appears in the top-left corner of the “Swath” button in the right-hand menu.
- The recording menu with the pivot swath options **(4)** slides down from the top of the map window.
- Start driving in a curved path that approximates the outer edge of the pivot you intend to make. This allows the software to form a center point. The center point is defined by the point that is an equal distance between the A point and the current position of the vehicle. After you have driven enough so that the system has enough information to draw a circle, the pivot swath **(6)** and the center line **(5)** appear on the map.
- As you continue driving along your intended pivot swath, the software periodically adjusts the arc and the center point location of the pivot swath to conform to the arc you drive along.

  NOTE: *You cannot drive a straight line away from the A point, because this does not give the software enough information to form a circle.*



RAPH22PLM1816AA 5

The pivot swath edit panel consists of the following items:



RAPH22PLM1810AA 6

- Pivot swath icon **(1)**
- An “A” button **(2)** – Pressing the “A” button relocates the A point to the current position of the vehicle.
- Record/Pause button **(3)** – When the "Record" button is pressed, it changes to the "Pause" button while recording is in process. When the "Pause" button is pressed, it changes to the "Record" button while recording is3 paused.
- “Stop” button **(4)**
- “X” cancel button **(5)**

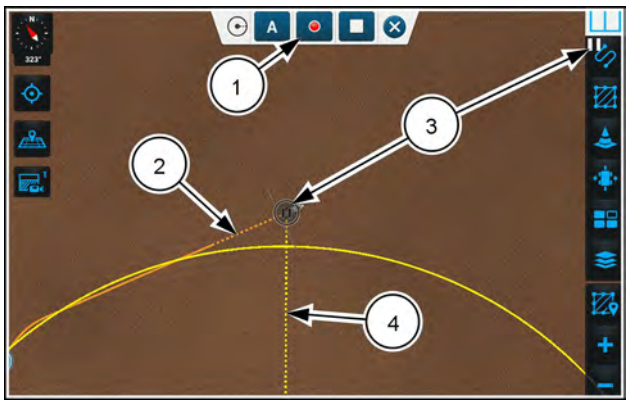
You can pause the recording at any time by pressing the “Pause” button. The “Pause” button immediately turns into a “Record” button **(1)**. While recording is paused, the driven orange line **(2)** appears dashed. Pause indicators **(3)** appear on the “Swath” icon in the right-hand menu, and on the vehicle in the map.

You can press the “Record” button **(1)** in the edit panel to resume recording. The pivot swath appears interpolated from the distance between where you paused and resumed recording.

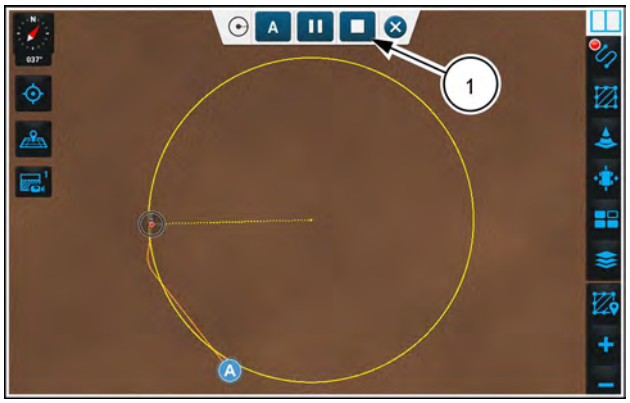
A dotted line **(4)** appears on the map from the newly calculated center point to the vehicle location. This informs you that the center point has been determined.

The driven path while recording was paused appears as a gap in the recorded line.

The “Stop” button **(1)** is disabled by default until the vehicle has driven far enough around the circumference of the pivot so that the pivot swath can be drawn on the map.



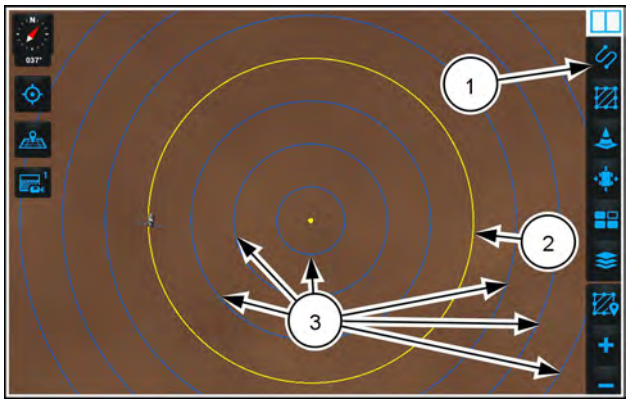
RAPH22PLM1817AA 7



RAPH22PLM1819AA 8

After the “Stop” button becomes active, press the “Stop” button in the edit panel to complete the recording procedure. The following actions occur:

- The edit panel closes by sliding up out of view.
- The recording indicator on the “Swath” button in the right-hand menu disappears **(1)**.
- The new pivot swath is automatically assigned a name. The default is in the format Swath Type_Date_Number.
- The new pivot swath becomes the active swath **(2)**. Guidance lines **(3)** appear in either direction within **8 km** (**5 miles**), or until the current field boundary has been filled when a boundary is available.
- When you pause recording, the route that you drive does not fill in to complete the swath until you stop recording.
- Up to three guidance lines **(3)** appear in either direction by swath width.

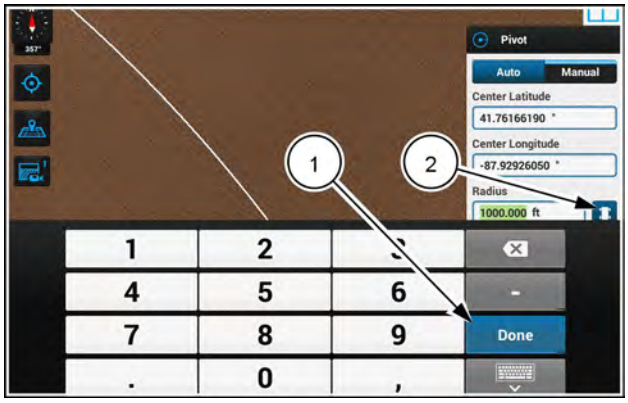


RAPH22PLM1820AA 9

Manual mode

When creating a pivot swath manually, enter the latitude and longitude manually for the center point. You can enter the latitude and longitude coordinates up to seven decimal places.

Enter the radius from the keyboard by pressing on the “Radius” input space. A pivot swath outline appears in white on the map while you are entering the data.



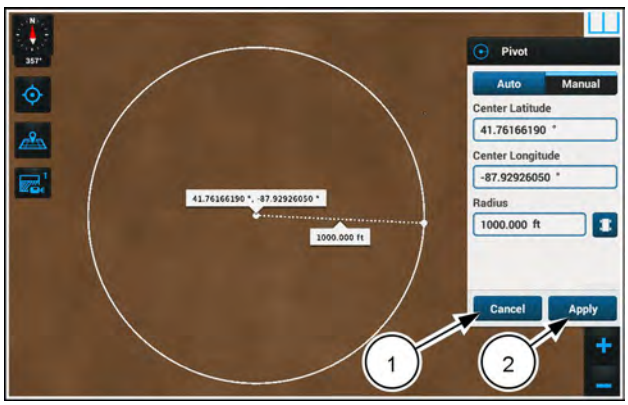
RAPH22PLM1814AA 10

With the latitude, longitude, and radius entered, press the “Done” button **(1)** on the numeric keypad.

You can also configure the radius from the center point to the current location of the vehicle using the “Vehicle” button **(2)**. A dashed white line and annotation appear on the map showing the radius of the pivot swath.

Press the “Cancel” button **(1)** in the “Pivot” menu to cancel the swath. The radius and/or the center point from the map disappear.

Press the “Apply” button **(2)** to generate the pivot swath.



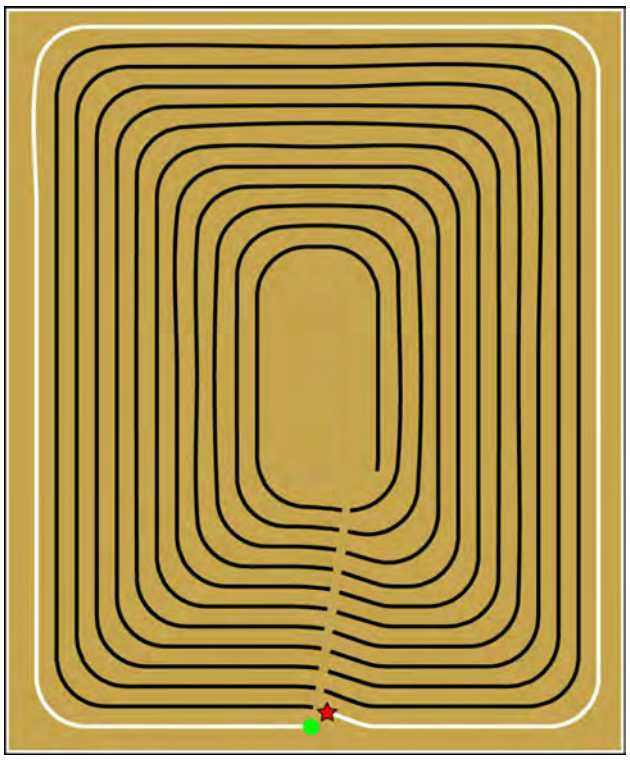
RAPH22PLM1815AA 11

NOTE: *If all input fields are not filled in, the “Apply” button is disabled.*

Spiral swath

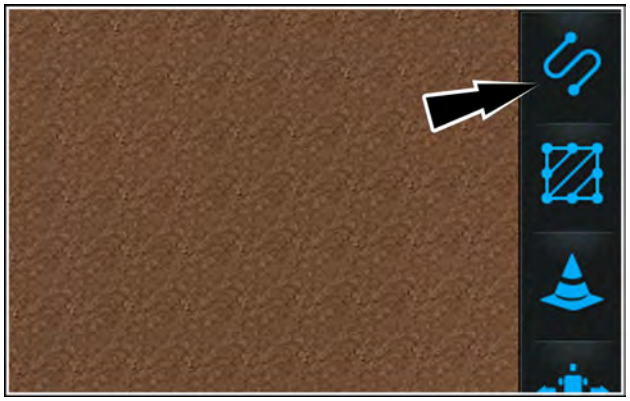
A spiral swath defines a curved pass pattern for a field or field section where the vehicle works the field in continuous, offset passes. The passes are offset by the working width of the attachment throughout the pattern.

You can create a spiral swath by selecting pivot, curve, or boundary options from a menu within the spiral swath controls.



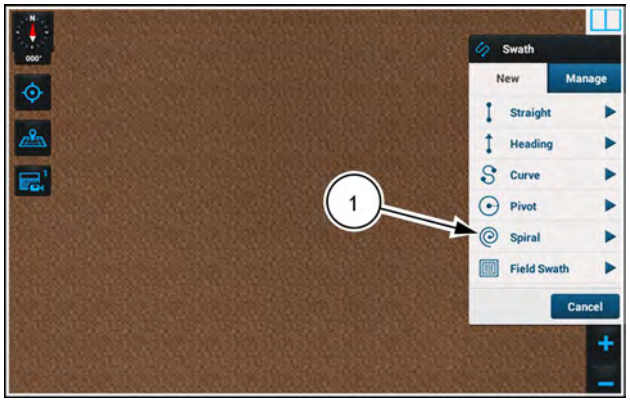
RCPH09DSP047BBG 1

In the right-hand menu, press the “Swath” icon.



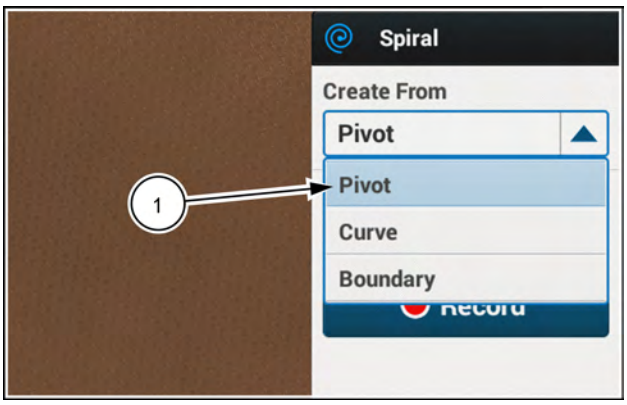
NHIL20PLM0086AA 2

Press the “Spiral” swath selection **(1)**. The “Spiral” menu appears.



RAPH22PLM1789AA 3

You can create a spiral swath from “Pivot,” “Curve,” or “Boundary.” Make the selection in the drop-down menu **(1)** inside the “Spiral” menu.



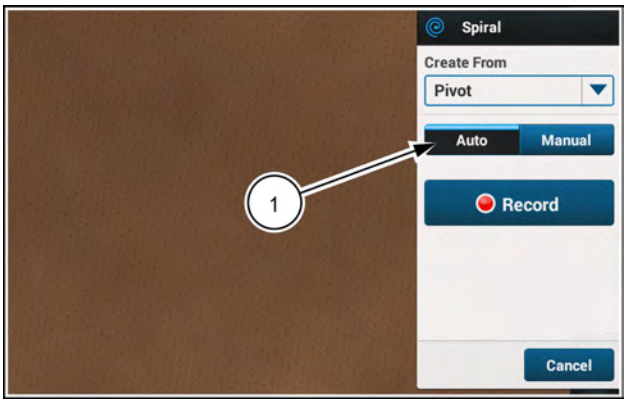
RAPH22PLM1822AA 4

Spiral from pivot

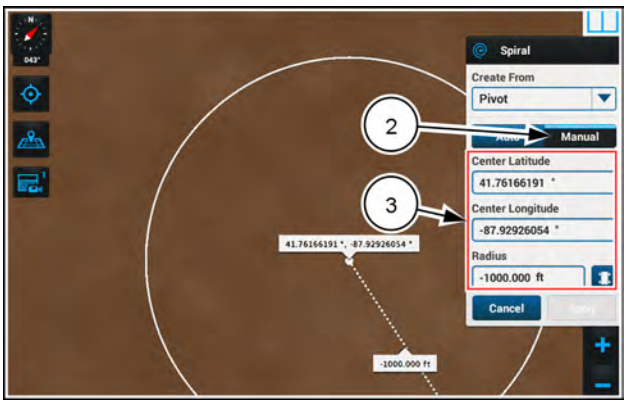
When creating a spiral based on a pivot pattern, you have options to create the swath in “Auto” **(1)** or “Manual” **(2)** mode. “Auto” is the default. The process of auto recording a spiral swath from pivot uses the same interaction as when you create a pivot swath. See “Pivot swath” (**5-32**) for information on creating a pivot swath.

If you have the latitude, longitude, and desired radius of the pivot, use “Manual” mode. With “Pivot” selected in the drop-down menu, choose “Manual” mode. Enter the following information **(3)** into the “Spiral” menu:

- Center latitude
- Center longitude
- Radius



RAPH22PLM1821AA 5

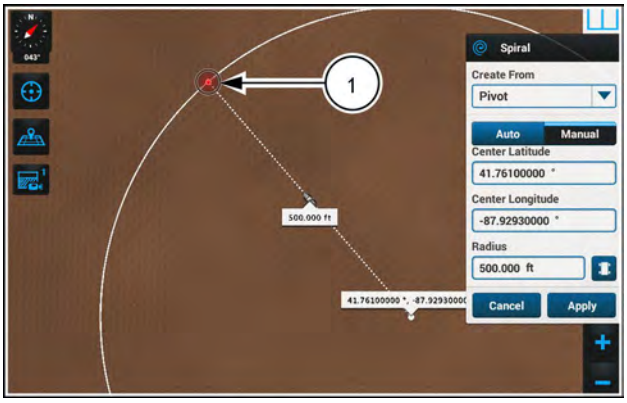


RAPH22PLM1823AA 6

In Auto mode the point where you begin recording becomes the default starting point.

In Manual mode, the nearest point to the vehicle automatically becomes the default starting point **(1)**.

After you enter the data for a pivot, in both Auto mode and Manual mode you must define the starting point or use the default starting point. Press on the map on the swath to move the starting point to where you wish to begin working on the swath.



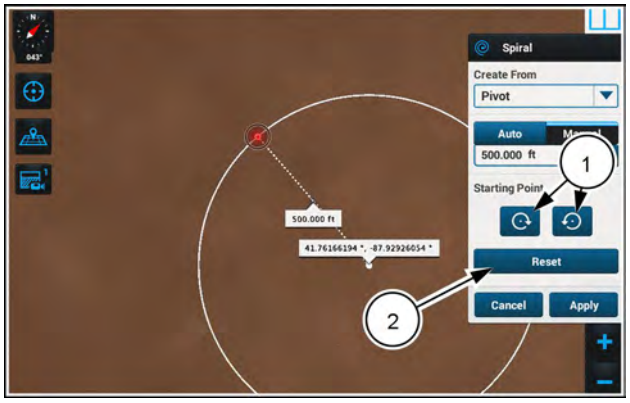
RAPH22PLM1824AA 7

You can also press the clockwise/counterclockwise buttons **(1)** to change the starting point in manual mode. Scroll down to the bottom of the menu to reveal the clockwise/counterclockwise buttons and the “Reset” button **(2)**.

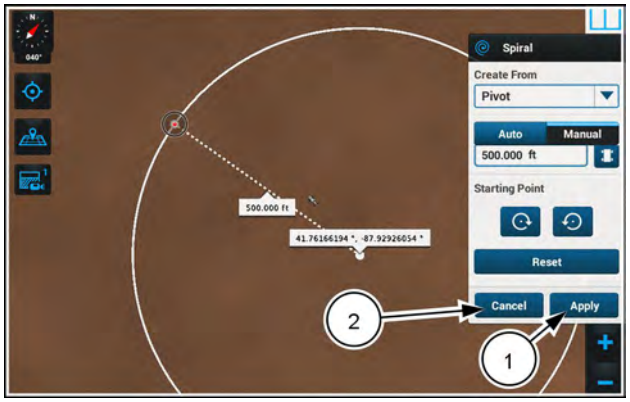
Press the “Reset” button **(2)** to return the center point to the nearest point to the vehicle.

Press the “Apply” button **(1)** to create the spiral swath.

Press the “Cancel” button **(2)** to cancel the spiral swath at any point. This removes the center point and the radius on the map. The “Swath” menu appears.

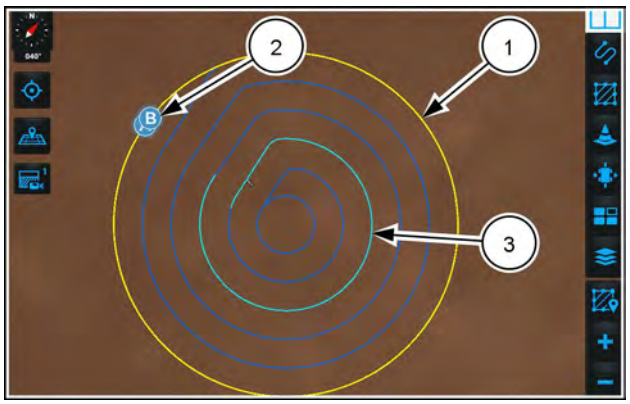


RAPH22PLM1825AA 8



RAPH22PLM1826AA 9

- The “Spiral” edit panel closes.
- The spiral swath line **(1)** changes from a white to a standard swath style.
- The end point **(2)** is defined by the system based on the required distance between the starting and end points.
- The swath lines **(3)** appear with transition curves connecting the end point of outer swaths to the starting point of the next inward swath.



RAPH22PLM1827AA 10

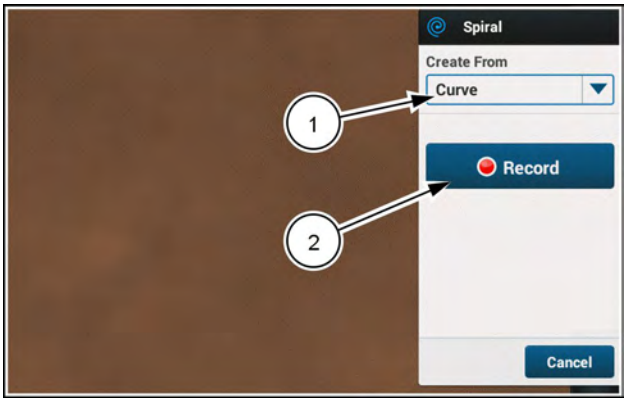
Spiral from curve

You can create a spiral swath that conforms to any irregular shape. For example, your active swath can conform to a curving river bank. The software will then create swath lines that efficiently conform to the original shape. Your curved spiral swath can conform to a rectangular pattern as well.

NOTE: *Use the curve swath method to create a spiral swath that will have straight or curved edges.*

To create a spiral swath based on a curve or other irregular shape, select “Curve” **(1)** in the drop-down menu of the “Spiral” menu.

Press the “Record” button **(2)**. Drive the vehicle along the desired path.

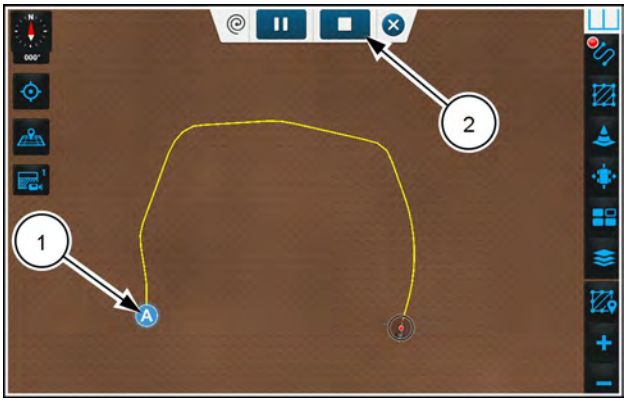


RAPH22PLM1828AA 11

Press the “Cancel” button to return to the “Swath” menu.

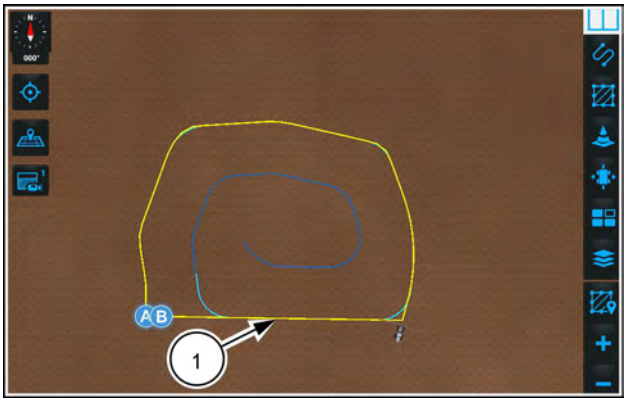
The point where you start recording defines the starting point **(1)** of the spiral swath. You can cause the recording to complete automatically by driving within one swath width of the starting point.

To stop recording, press the “Stop” button **(2)**.



RAPH22PLM1829AA 12

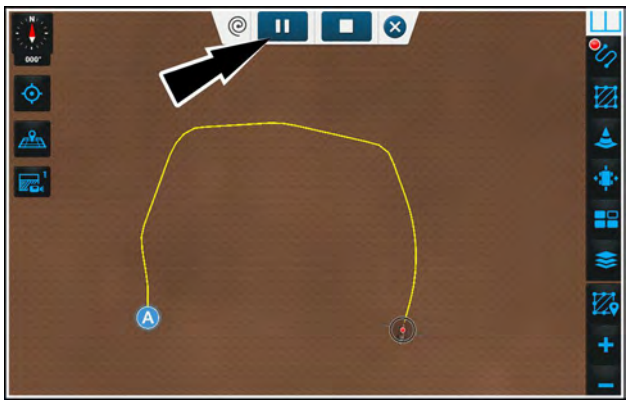
A straight line **(1)** appears between the point where you press the “Stop” button and the closest point to the starting point. This defines the end point of the spiral.



RAPH22PLM1830AA 13

If you wish to record a perfectly straight line between the current vehicle location and a desired point on the swath, use the pause function.

Press the “Pause” button to pause recording.

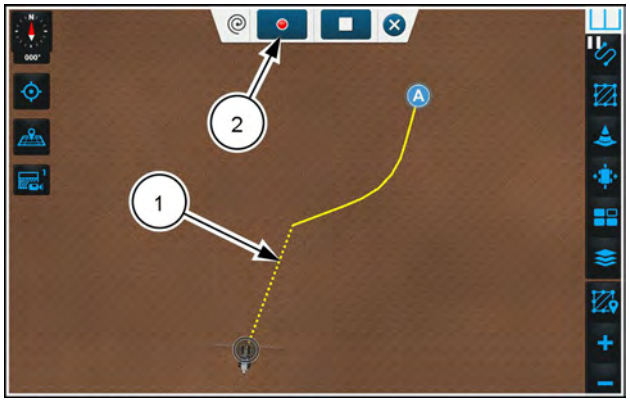


RAPH22PLM1829AA 14

With recording paused, drive to a desired location where you want a straight line between the last recorded point and a point where you will resume recording.

A straight, dashed line **(1)** appears between the location where you paused recording and follows the current vehicle location.

Press the “Record” button **(2)** to resume recording.

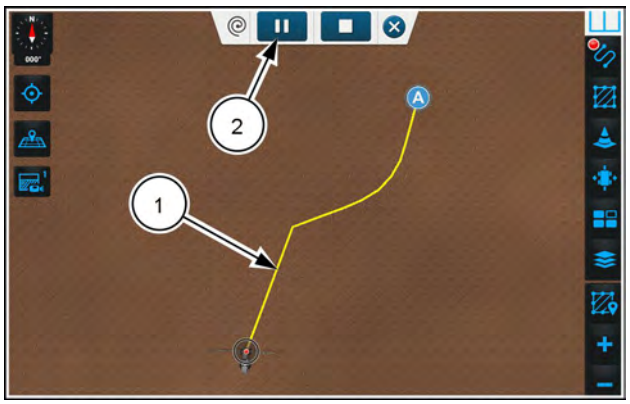


RAPH22PLM1831AA 15

The dashed line that appeared while you paused recording is replaced by a solid line **(1)** that adds to the swath.

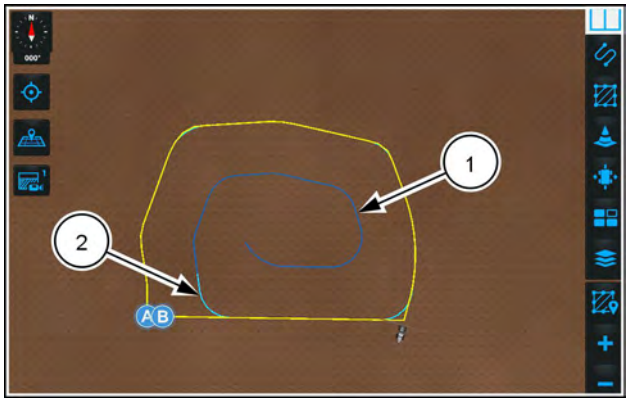
The “Pause” button **(2)** replaces the “Record” button.

Resume recording the swath line.



RAPH22PLM1832AA 16

After you have created the spiral swath, interior guidance lines **(1)** appear. The transition curve **(2)** connects the end point of the outer swath to the starting point of the next interior swath.



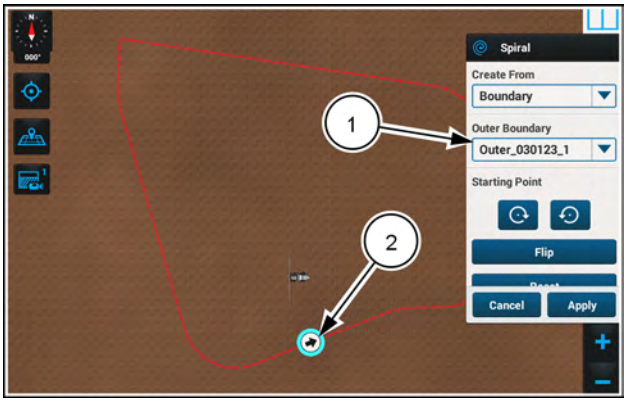
RAPH22PLM1830AA 17

Spiral from boundary

In the “Spiral” menu in the drop-down menu, the “Boundary” item is only available if there are any boundaries available. If more than one boundary is available, a second drop-down that lists the boundaries **(1)** contains all of the available boundaries. If there is only one boundary available, the drop-down lists the boundary but in a disabled state.

By default, the closest point from the boundary to the vehicle becomes the starting point **(2)** of the spiral swath.

An annotation temporarily appears by the starting point stating, “Touch swath to relocate starting point."

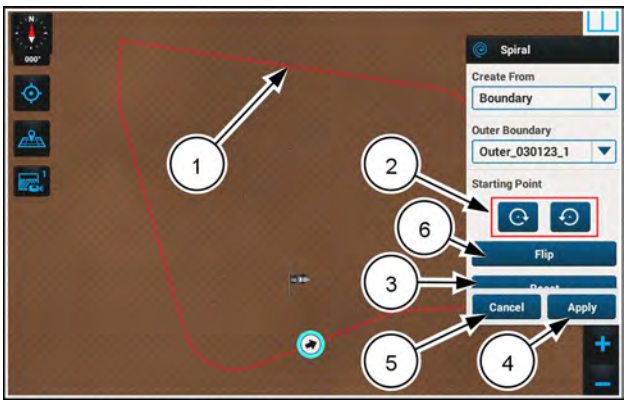


RAPH22PLM1833AA 18

You can move the starting point by pressing the boundary object **(1)**.

You can also press the clockwise/counterclockwise buttons **(2)** to change the starting point.

The indicator on the circle moves to the commanded position.



RAPH22PLM1833AA 19

Press the “Reset” button **(3)**, to return the starting point to the nearest point to the vehicle.

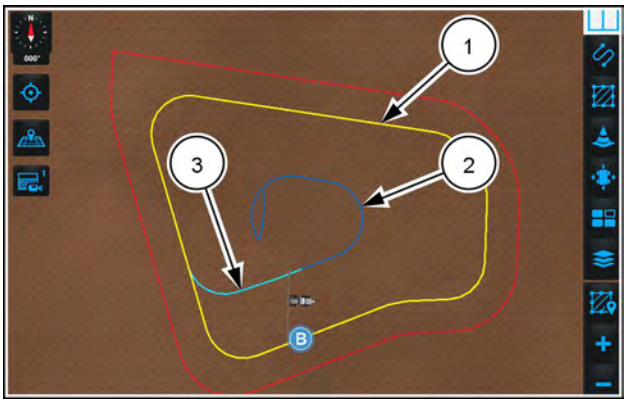
Press the “Apply” button **(4)** to create the spiral swath.

Press the “Cancel” button **(5)** to cancel the spiral swath at any point. The “Swath” menu appears.

Press the “Flip” button **(6)** to cause the inward rotation of the completed spiral to reverse its direction.

After you press the “Apply” button, the following actions occur:

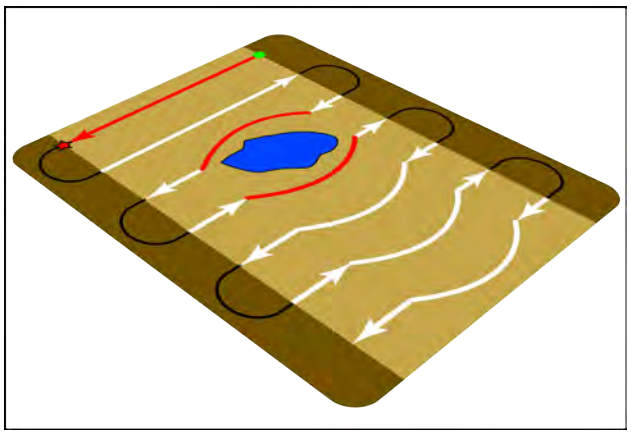
- The spiral swath line **(1)** appears on the map.
- Interior guidance lines **(2)** appear. The transition curves **(3)** connect the end points of the outer swaths to the starting point of the next interior swaths.
- All annotations stay on the map for **5 s** after the lines are generated.



RAPH22PLM1834AA 20

MultiSwath

Use the “MultiSwath” guidance line to generate a unique swath shape, as required, from one field pass to the next. The **AFS AccuGuide™** system generates each field pass based on the previous field pass, regardless of whether the operator drove the previous field pass manually, engaged the vehicle on a generated guidance line, or used a combination of manual driving and guided driving.



RAIL14DSP0713BA 1

The MultiSwath is available for all vehicles, implements, and operations.

An operator might use a MultiSwath to record:

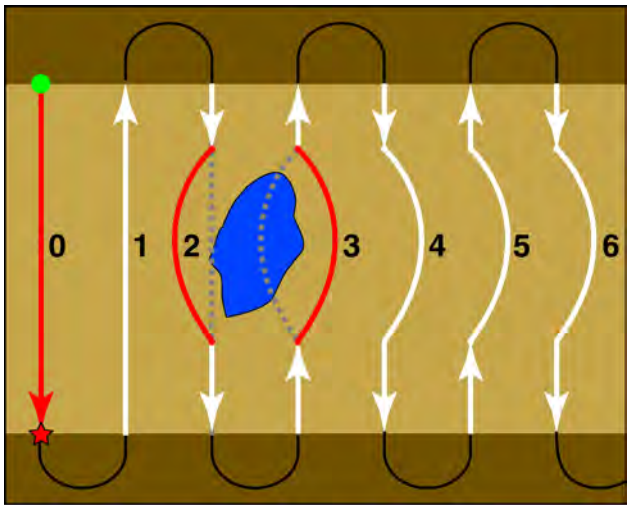
- Swath lines around impassible obstacles such as waterways, utility poles, and terraces
- Swath lines that pass through temporary obstacles that will not be present for future operations that use the swath
- A headland pass around a field and generate any additional headland passes as required

When a MultiSwath is selected, each pass through the field is recorded and can be used to generate the next pass through the field. Once the operator starts MultiSwath recording, the recording process is automatic. The operator selects a trigger event or “completion mode” that determines when the current pass is complete and a new pass begins.

When MultiSwath recording is in progress, all recorded and generated swaths become part of a “MultiSwath set.” The display saves the MultiSwath set to the current field. This enables the operator to use the MultiSwath for other operations in the future with any **AFS AccuGuide™** vehicle in the same field.

You record each subswath separately. The process is different from how other swath types are recorded, as listed here:

- Under certain conditions, recording starts automatically
- Under certain conditions, recording stops automatically
- Recording subswaths is an ongoing process. New subswaths may be recorded and added to the set of existing subswaths. This is different from other swath types where the recorded swath may not change.



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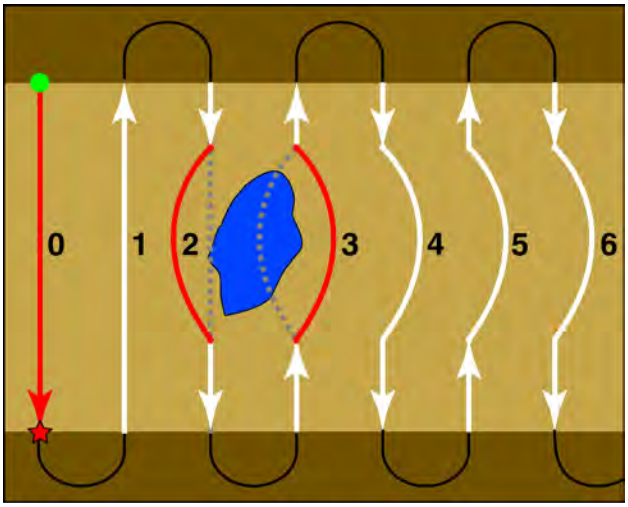
MultiSwath example

Figure **2** shows one potential use of the MultiSwath. An operator wishes to record a swath pattern for a field that contains a pond.

- The blue shape represents the pond that the operator wishes to avoid.
- The green dot represents the point where the operator starts recording the MultiSwath using the recording panel.
- The red star represents the end of the recorded initial pass.
- The solid black lines represent headland turns that the operator drives manually.
- The solid red lines represent manual driving while the MultiSwath is actively recording.
- The solid white lines represent MultiSwath guided driving.
- The dashed gray lines represent generated segments that the system automatically discards when the operator takes control.



RAIL14DSP0717BA 3

NOTE: *The point where MultiSwath recording stops for each field pass depends on the completion mode in the "Set MultiSwath" window.*

To record a MultiSwath for these conditions:

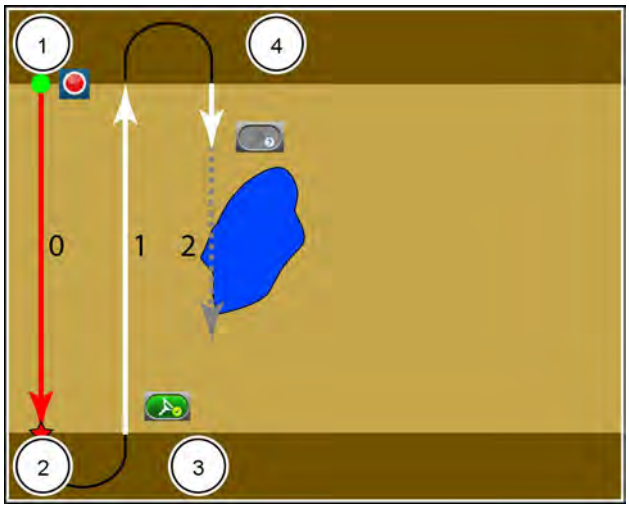
1. In a map User Defined Window (UDW) you select "Multi Swath" as the swath type in the "New" tab of the Swath" menu and then press the "Driven" button. You then press the "Start" button. In the recording panel you then press the record button before manually driving the initial field pass, swath 0.

   NOTE: *Rather than drive the initial field pass manually, you can select the "From Swath" toggle in the "Swath" menu, as described later in this section, to create a heading-based straight swath.*

2. As you complete the first field pass, the system saves swath 0 and generates swath 1 based on swath 0.

   NOTE: *The system automatically selects the current MultiSwath.*

3. You press the engage button to engage the vehicle on swath 1, and drive the full field pass using the MultiSwath as a guidance line until you enter the second headland turn.
4. The system saves swath 1 and generates swath 2 based on swath 1. You engage the vehicle on the generated swath 2. However, there is an obstacle (pond) that prevents you from driving another straight pass. The dashed gray line represents the segment of the generated swath 2 that you wish to discard.

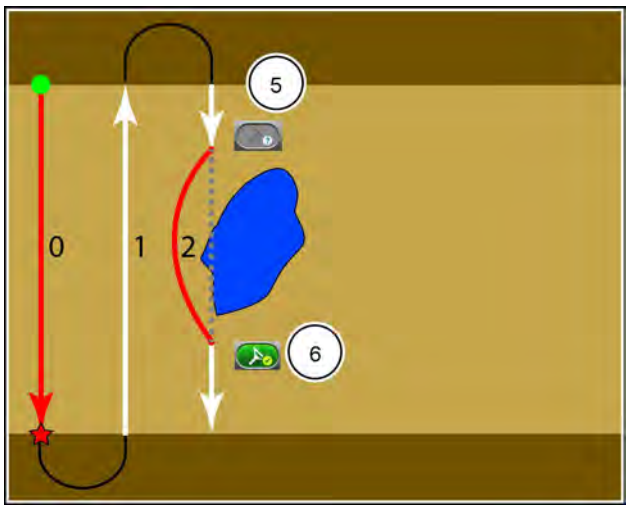


RAIL18PLM0502FA 4

5. You disengage autoguidance and drive around the pond. The red line in swath 2 indicates the manual steering path you drive.

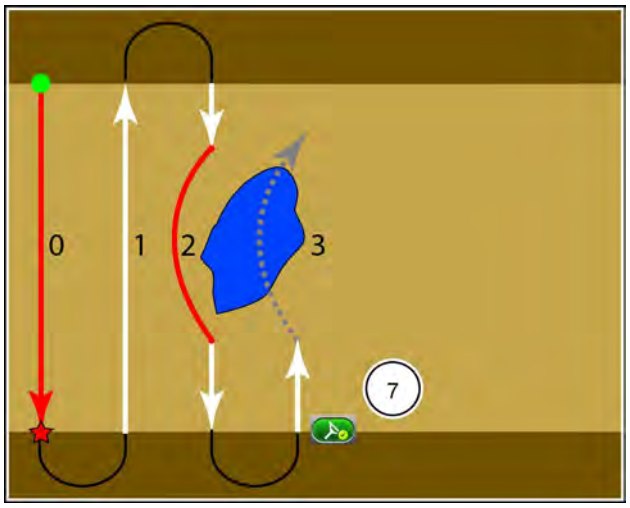
   NOTE: *Automatic overlap control can prevent double application where the recorded swath 2 overlaps the recorded swath 1. See the implement software operating guide for additional information about automatic overlap control.*

6. You then re-engage the vehicle on the generated swath 2 before entering the third headland turn. The system automatically discards the straight segment that you did not drive.



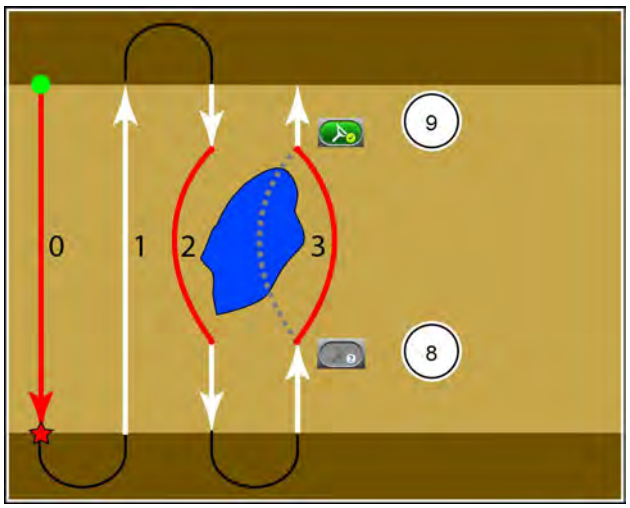
RAIL18PLM0507FA 5

7. The system saves swath 2 and generates swath 3 based on swath 2. The new shape reflects the sections of the previous pass that you drove with guidance engaged as well as the section of the previous pass that you drove manually. You engage the vehicle on the generated swath 3. However, you must manually steer a portion of swath 3 to avoid the other side of the pond. The dashed gray line represents the segment of the generated swath 3 that you wishes to discard.



RAIL18PLM0504FA 6

8. Before the generated swath 3 turns toward the pond, you disengage autoguidance and drive around the pond again. The red line in swath 3 indicates the manual steering path you took.
9. You re-engage the vehicle on the generated swath 3 before entering the fourth headland turn. The system automatically discards the curved segment that you did not drive.



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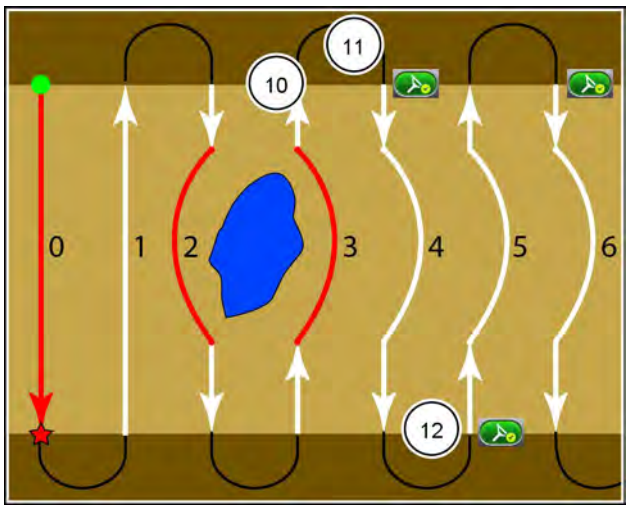
10. The system saves swath 3 and generates swath 4 based on swath 3. Again, the new shape reflects the sections of the previous pass that you drove with guidance engaged as well as the section of the previous pass that you drove manually.
11. You engage the vehicle on the generated swath 4, drive the full field pass with guidance, and enter the headland turn.
12. The system saves swath 4 and generates swath 5 based on swath 4. The new shape reflects the previous pass that you drove with guidance engaged. As you complete each subsequent field pass with guidance engaged, the system continues to generate each subsequent swath line based on the previous field pass.



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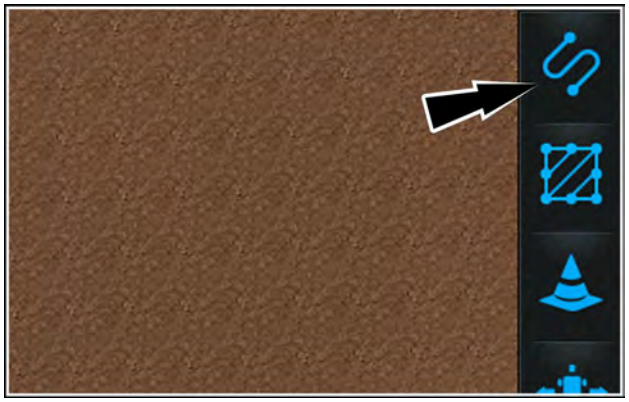
Creating a MultiSwath

In the right-hand menu, press the “Swath” icon.



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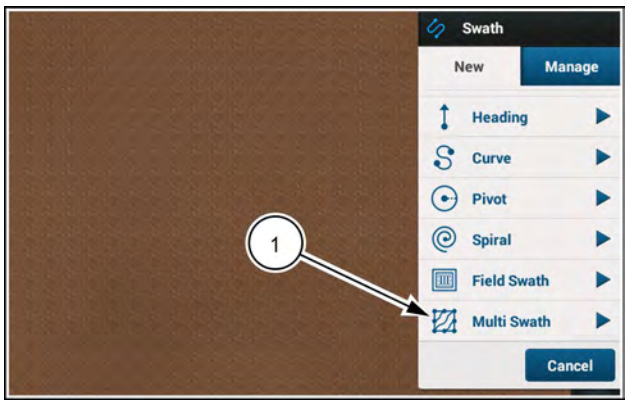
Press the “Multi Swath” swath selection **(1)**. The “Multi Swath” recording dialog appears.

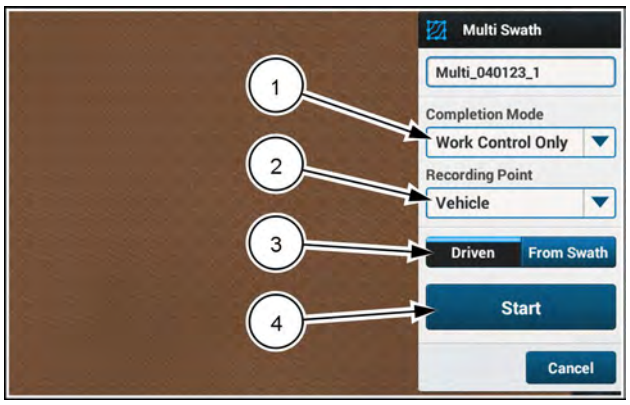
NOTE: *You may need to swipe up on the swath selection menu to see the “Multi Swath” swath selection.*



RAPH23PLM0001AA 10

The “Multi Swath” menu contains the following controls:

- “Completion Mode” **(1)**
- “Recording Point **(2)**
- Recording toggle button with the options “Driven” and “From Swath” **(3)**
- “Start” button **(4)**

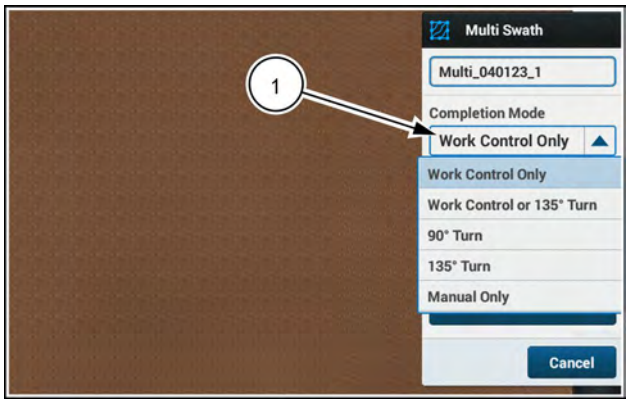


RAPH23PLM0002AA 11

MultiSwath completion mode

To make a MultiSwath, you must use the “Completion Mode” menu **(1)** to configure triggers that stop and start recording automatically. MultiSwath recording uses the following triggers to decide when to start the recording automatically as well as when to stop the recording automatically:

- Work control only
- Work Control or **135°** turn
- **90°** turn
- **135°** turn
- Manual only



RAPH23PLM0003AA 12

The completion mode options are described in the following table.

Before you record a MultiSwath, select an appropriate MultiSwath completion mode for your current operating conditions.

MultiSwath completion options

"Work Control Only" [1]	• This mode uses work status from the vehicle to determine when MultiSwath recording starts and stops. The transition from "in work" to "out of work" ends recording for the current pass. • You can also manually start or stop recording at any time with the recording panel.

"Work control or **135°** Turn" [1]	• This mode is a combination of "Work control" and " **135°** Turn" modes.
	• Recording for the current pass ends:
	  • Upon the transition from "in work" to "out of work"
	  OR
	  • When the vehicle completes an end of row turn – i.e. the vehicle changes direction of travel by more than **135°**

" **90°** Turn"	• Use this mode for straight or nearly straight field passes. • The swath completes when the vehicle completes an end of row turn – i.e. the vehicle changes direction of travel by more than **90°**. • You can also manually start or stop recording at any time with the recording panel.
" **135°** Turn"	• Use this mode for curved field passes or contours. • The swath completes when the vehicle completes an end of row turn – i.e. the vehicle changes direction of travel by more than **135°**. • You can also manually start or stop recording at any time with the recording panel.
"Manual Only"	• MultiSwath recording only starts and stops when you press the buttons in the recording panel. The system ignores trigger points for all other completion modes. • Use this mode when end of row turn detection is impossible: for example, when operating on oddly-shaped terraces or driving a headland pass. • You can also use this mode to record a headland using individual lines or curves for each segment of the headland.

[1] Make sure that the work switch source is set correctly. See "Sources screen" (**4-72**).

The following table shows the recommended completion modes for specific applications:

- A check mark indicates that the mode is recommended.
- "OK" indicates that the operator may benefit from this mode in some conditions.
- A letter "X" indicates that the mode is not recommended.

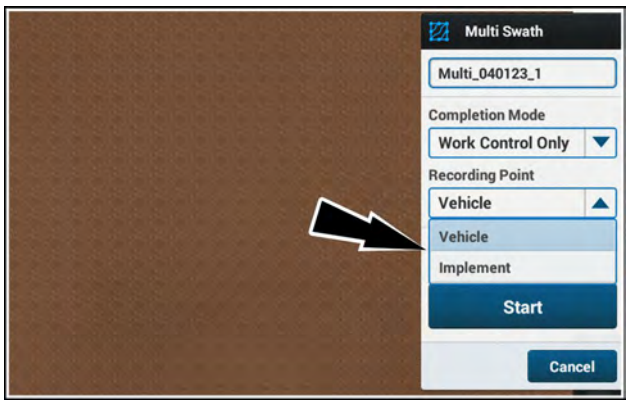
Field operation	"Work control only"	"Work control or 135° Turn"	" 90° Turn"	" 135° Turn"	"Manual"
Headlands	✓	OK	X [1]	OK	OK
Field interiors	✓	OK	OK	OK	OK

[1] " **90°** Turn" mode is too restrictive to record all of the turns that headland recording requires.

Recording point

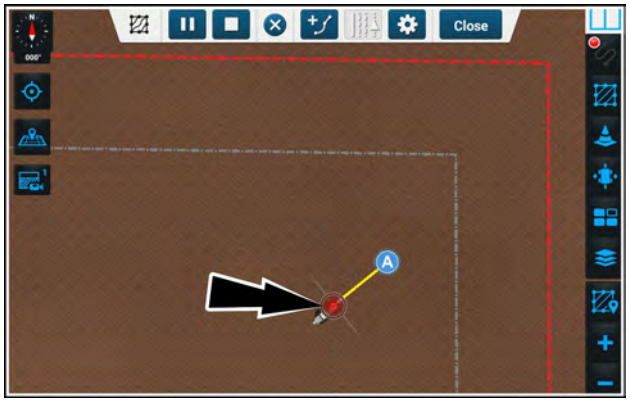
The “Recording Point” menu provides the following options:

- Vehicle
- Implement



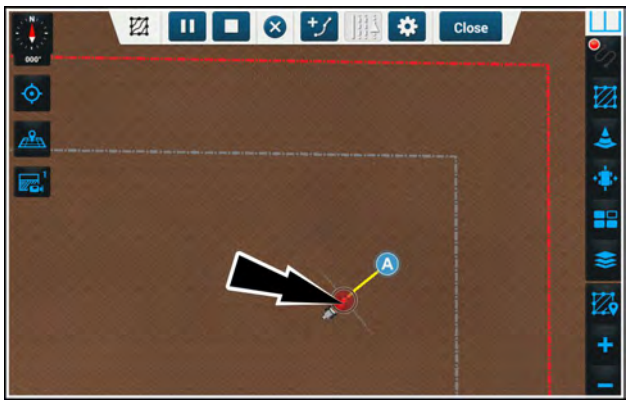
RAPH23PLM0004AA 13

In “Vehicle” mode, the system uses the center of the vehicle as the reference point for making the subswaths.



RAPH23PLM0023AA 14

In “Implement” mode the system uses the center of the implement as the reference point for making the subswaths.



RAPH23PLM0024AA 15

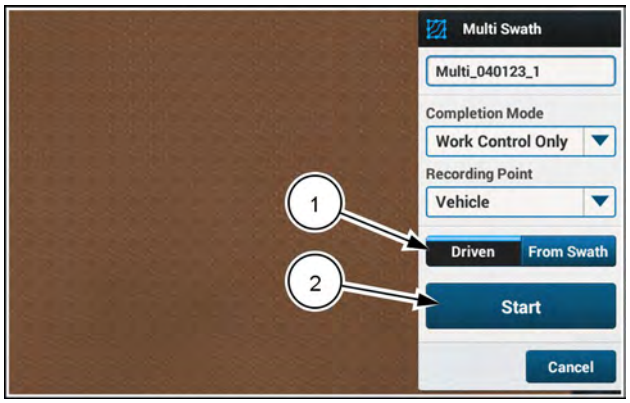
Automatic swath creation using “Driven” mode

In “Driven” mode, you drive the vehicle or engage auto-guidance on a previous swath. As you drive, the system records your path as a new subswath. When you disengage from the subswath, new temporary swaths appear on each side of the subswath you just made.

From the “Completion Mode” menu, select a completion mode.

From the “Recording Point” menu, select a recording point.

With “Driven” **(1)** selected in the “Multi Swath” menu, press the “Start” button **(2)**.



RAPH23PLM0002AA 16

The recording panel appears.

Press the “record” button **(1)** to begin recording the swath. Drive the vehicle along your desired path.

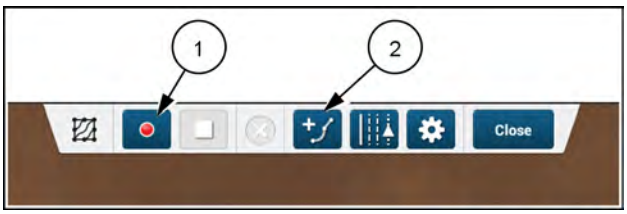
Make the turn at the end of your current row. When the system detects your trigger (work switch, 90° turn, 135° turn, or manual control), a parallel identical swath appears on both sides of the swath that you just created.

NOTE: *To create a temporary straight swath or heading swath during your initial pass, press the “add subswath” button* ***(2)****. For more information, see the heading “Adding a subswath” that follows this section.*

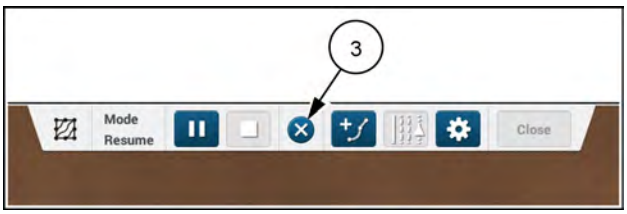
To discontinue subswath recording without saving the work, press the cancel button **(3)**.

After you have recorded enough of the subswath for the system to make a multiswath, the stop button **(4)** activates. You can press the stop button to stop recording and keep the results. The system will generate a parallel identical swath.

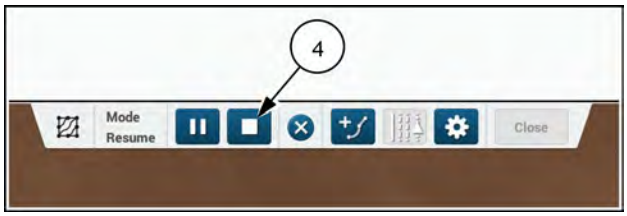
NOTE: *Make turns that are equal to or wider than your configured minimum-turn radius. If you make a turn that is tighter than the configured minimum-turn radius, the system adjusts the generated parallel swaths to conform to the minimum turn radius. If the driven swath is too tight, the generated parallel swaths may not be usable for your operation.*



RAPH21PLM1042AA 17



RAPH21PLM1043AA 18

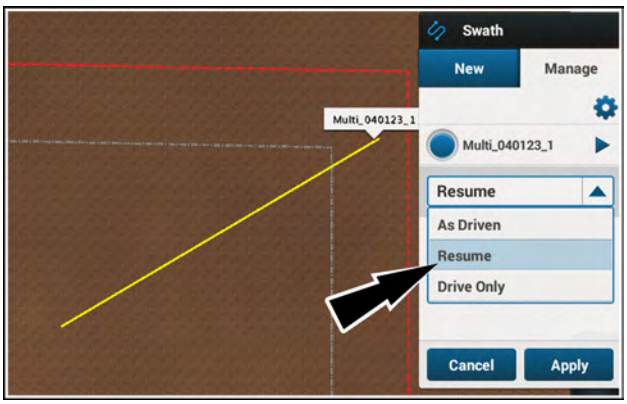


RAPH21PLM1044AA 19

RAIL20PLM1043AA 20

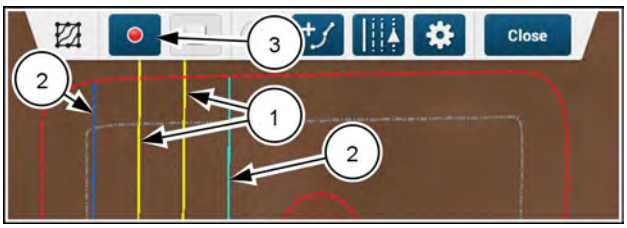
“Resume” mode

You can close a recording and then resume it later. If you select the “Resume” menu option in the “Manage” tab, you can resume recording of the selected MultiSwath.



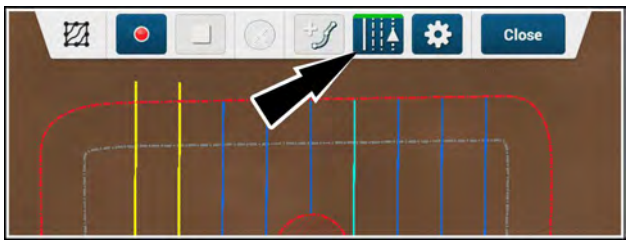
RAPH23PLM0007AA 21

The previously recorded subswaths **(1)** appear in the map. If the vehicle is close enough to engage, the system generates map lines **(2)** for you to engage the autoguidance. The “record” button **(3)** is active in the recording panel.



RAPH23PLM0008AA 22

If the vehicle is too far away from the previously recorded subswaths, the system does not automatically generate guidance lines. However if you have not yet pressed the “record” button, you can use the identical mode to generate usable navigation lines. See “MultiSwath identical mode” later in this section.

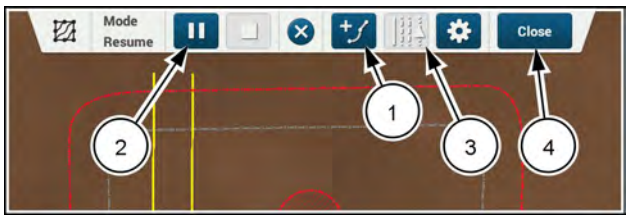


RAPH23PLM0009AA 23

If you enter the “Resume” mode and press the record button while the vehicle is too far away from the previously recorded subswaths, the system does not generate guidance lines. However, you still have the option to create a temporary subswath **(1)**.

If you inadvertently pressed the record button before using the identical mode to generate navigation lines, you must close the recording panel and start again.

NOTE: *Pressing the record button deactivates the identical button. After pressing the record button and then the pause button* ***(2)****, the identical button* ***(3)*** *remains deactivated. You must close* ***(4)*** *the recording panel if you wish to generate usable navigation lines from the previously recorded subswaths.*



RAPH23PLM0010AA 24

Using previously created swaths with “From Swath”

You can use a previously-created swath to start a MultiSwath. This helps in creating temporary subswaths that are more accurate than is possible by driving to record the swath. The “From Swath” option is especially useful for very long paths or in other situations in which it is difficult to drive a perfect pattern.

From the “Completion Mode” menu, select a completion mode.

From the “Recording Point” menu, select a recording point.

To use a previously created swath, press the “From Swath” button **(1)** in the “Multi Swath” menu. The “Select Swath” button **(2)** appears. Press the “Select Swath” button to select a previously-created swath.

RAPH23PLM0011AA 25

The swath selection menu lists all curve and straight swaths in their order of creation.

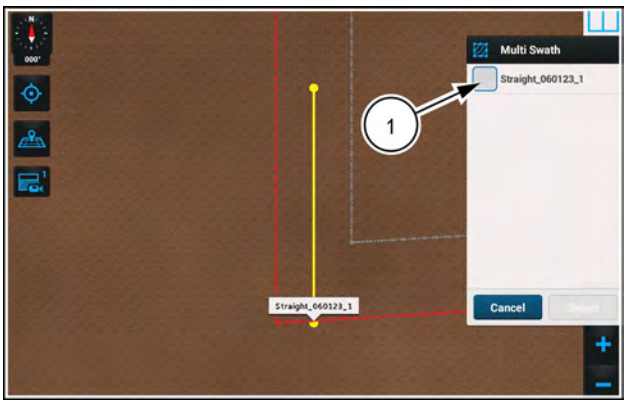
Press the check boxes **(1)** in the swath selection menu to select one or more swaths to start with. When you select a swath in the swath selection menu, an annotation appears by the corresponding swath in the map.

Press the “Select” button **(2)** to add the subswath.

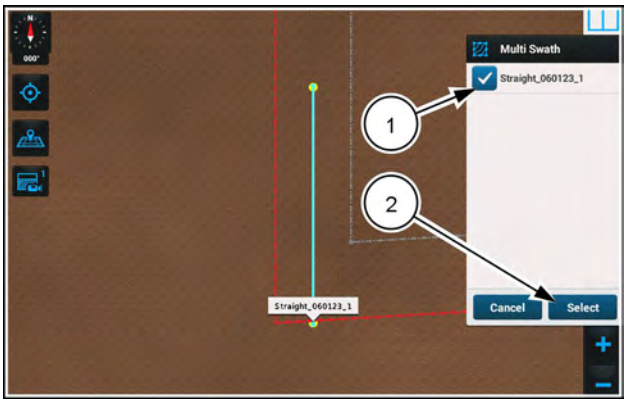
NOTE: *The “Select” button* ***(2)*** *is disabled until at least one swath is selected.*

If you wish to cancel the swath selection, press the “Cancel” button.

To begin recording a MultiSwath, press the “Select” button. Drive the vehicle and engage autoguidance on the newly-added subswath.



RAPH23PLM0012AA 26

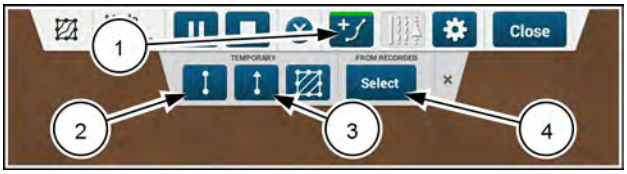


RAPH23PLM0013AA 27

Adding a temporary subswath

During multiswath recording you can use temporary subswaths to create long, straight lines between two points or in a desired heading.

To add a temporary subswath to the MultiSwath, press the “Add Subswath” button **(1)**. A green indicator appears in the “Add Subswath” button. The “Add Subswath” edit panel appears.



RAPH23PLM0014AA 28

Press the button **(2)** to add a temporary subswath to the MultiSwath. Create the temporary straight subswath as you would create a regular straight swath. See “Straight swath” (**5-22**).

Press the button **(3)** to add a temporary heading subswath to the MultiSwath. Create the temporary heading subswath as you would create a regular heading swath. See “Heading swath” (**5-26**).

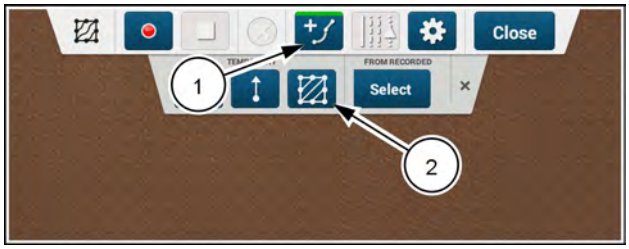
Press the “Select” button **(4)** to add a straight swath that already exists.

Adding a temporary boundary

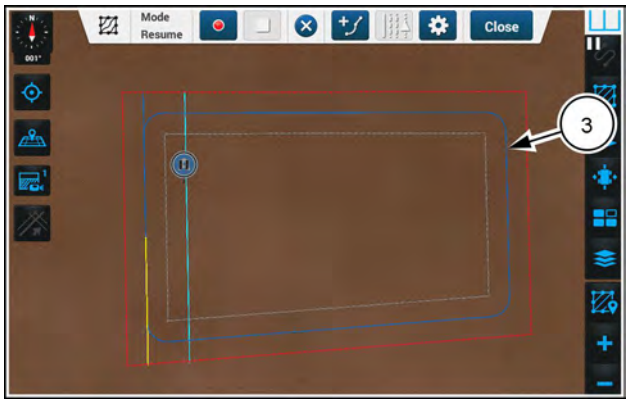
You can use the field boundary as a guide for creating navigation lines, such as when you drive along the headland.

To add a temporary boundary to the MultiSwath, press the “Add Subswath” button **(1)**. The “Add Subswath” edit panel appears.

Press the temporary boundary button **(2)** to add a temporary boundary subswath **(3)** to a MultiSwath.



RAPH23PLM0025AA 29



RAPH23PLM0015AA 30

MultiSwath identical mode

The Identical mode allows you to generate a series of subswaths based on one recorded swath. The generated subswaths conform to the original swath in the most mathematically efficient manner given the width of your implement.

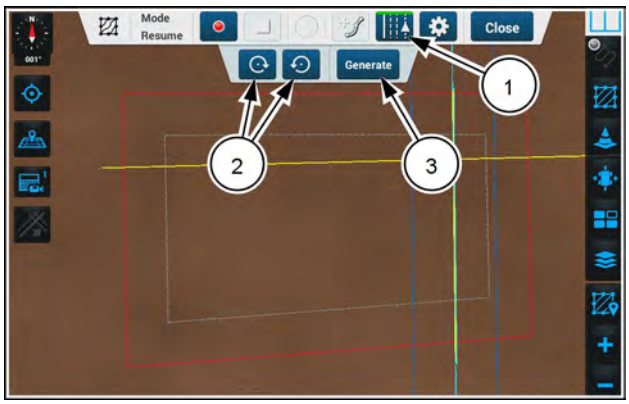
To generate subswaths automatically, press on the “Identical” button **(1)** in the MultiSwath edit panel. A green indicator appears on the top of the “Identical” button.

Select your subswath with the buttons **(2)**. If only one subswath is available, the buttons appear inactive.

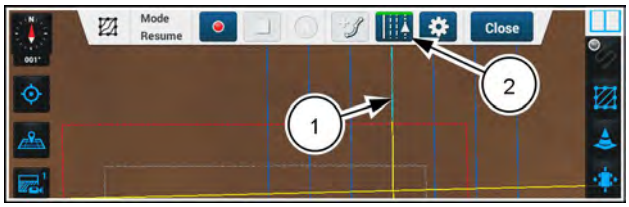
Press the “Generate” button **(3)** to create the identical, parallel swaths.

The parallel, identical swaths are shown on the map. As you drive the vehicle, the closest swath **(1)** is highlighted.

To close the identical subswath mode, press the “Identical” button **(2)** again. The subswaths disappear from the map and the green indicator on the “Identical” button disappears.



RAPH23PLM0016AA 31



RAPH23PLM0017AA 32

Stopping recording

Recording stops when you press the “Stop” button. It also stops when a condition is satisfied for the trigger that you selected in the “Completion Mode” menu. The recorded path changes to the color of a regular subswath, and one swath appears on each side of the recorded swath.

RAPH21PLM1044AA 33

Automatic stoppage of recording

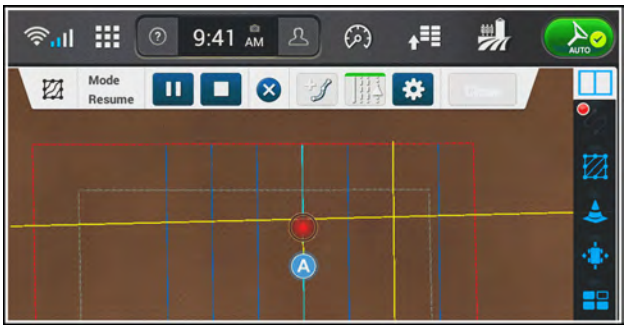
Recording stops automatically for any of the following conditions:

- The trigger is based upon work control and work control transitions from ON to OFF.
- The trigger is based upon a **90°** or **135°** turn and a turn is detected.
- The swath you are recording crosses itself.
- The vehicle backs up.

Engaging on a MultiSwath

When you engage on a MultiSwath for the purpose of recording a multiswath during field operations:

- The recording panel remains open.
- The recording is obtained from the swath the autoguidance is engaged on if cross-track error is less than **30 cm** (**12 in**). Otherwise, the system uses the exact path of the GNSS receiver until the cross-track error is less than **30 cm** (**12 in**).



RAPH23PLM0018AA 34

As driven mode

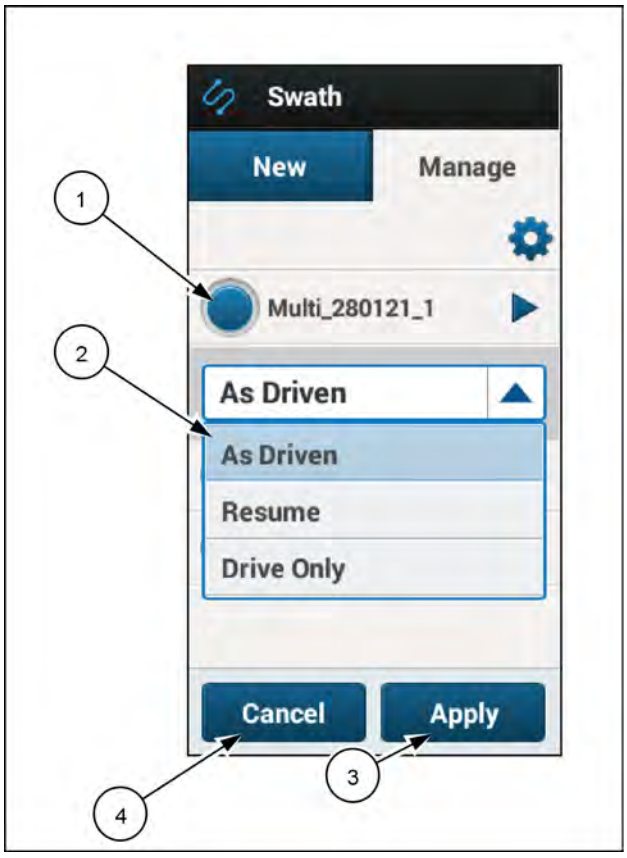
The “As Driven” mode is similar to the “Driven” mode you select on the “New” tab. However, you select the “As Driven” mode if you wish to add subswaths to an existing multiswath while engaged on another multiswath. The system adds new subswaths by mapping the path you drive while recording.

In the “Swath” menu “Manage” tab, press the radio button **(1)** to choose the desired multiswath.

In the drop-down menu, press the “As Driven” menu option **(2)**.

Press the “Apply” button **(3)**. The “Save As Driven” window appears.

Press the “Cancel” button **(4)** if you do not wish to use the “As Driven” mode.



RAPH21PLM1513BA 35

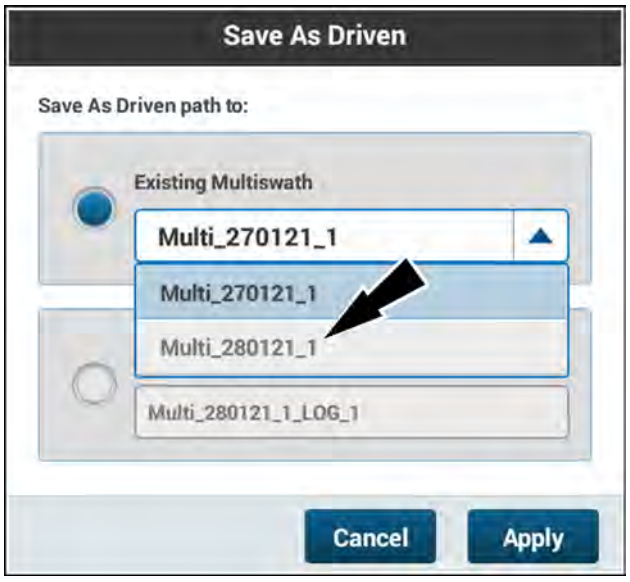
A multiswath other than the one you selected in the “Swath” menu appears in the “Existing Multiswath” area. The drop-down menu **(1)** lists all of the recorded multi-swaths. Use the drop-down menu to select one of the multiswaths as the destination for the as-driven path.

Open the drop-down menu to choose another multiswath, or press the “Apply” button **(2)** to choose the preselected multiswath.

Press the “Cancel” button **(3)** if you wish to close the “Save As Driven” window without entering the “As Driven” mode. The “Swath” menu returns with your previous entries.

RAPH21PLM1511BA 36

In the drop-down menu the multiswath you selected in the “Swath” menu “Manage” tab appears gray. This is because it is the active multiswath that you will modifiy, using the multiswath that you select in the “Save As Driven” window.



RAPH21PLM1509BA 37

You can also create a new multiswath as you add the subswaths to the selected multiswath.

Press the radio button **(1)** in “Create a new Multiswath” area.

You can keep the default name of the new multiswath or rename it. Press the name field **(2)** of the new multiswath to bring up a keypad. Then rename the new multiswath to suit your operation.

Press the “Apply” **(3)** button to accept your selection.

Press the “Cancel” button **(4)** if you do not wish to use the “As Driven” mode.

RAPH21PLM1510BA 38

In “As Driven” mode you can create temporary subswaths and engage on them.

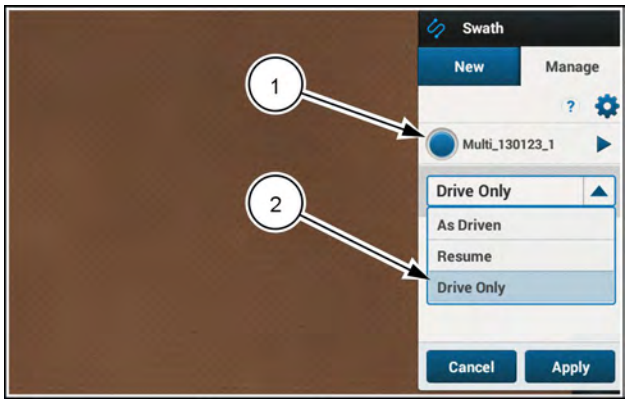
This example shows a temporary boundary that is ready for engagement.

RAPH23PLM0019AA 39

Drive only mode

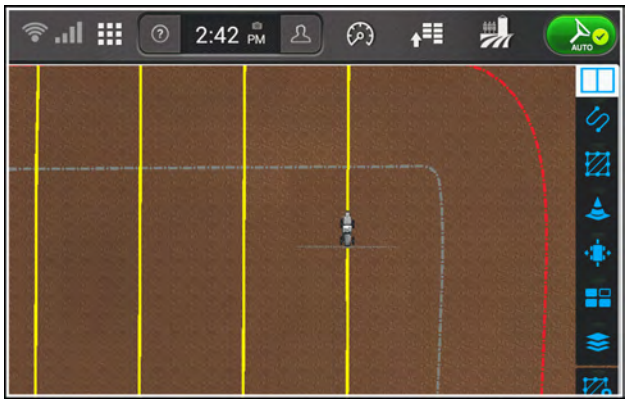
Use the “Drive Only” mode while using a previously recorded MultiSwath if you anticipate that you will take over the vehicle and deviate from the MultiSwath you are using. For example, during a spraying operation you may need to deviate from the swath and apply product to a previously missed area. The “Drive Only” mode prevents this deviation from being recorded as an edited MultiSwath.

From the swath “Manage” tab, select your desired Multi-Swath **(1)**. The mode drop-down menu **(2)** appears.



RAPH23PLM0101AA 40

With the “Drive Only” option selected, the recording panel does not appear.



RAPH23PLM0021AA 41

If the autoguidance disengages

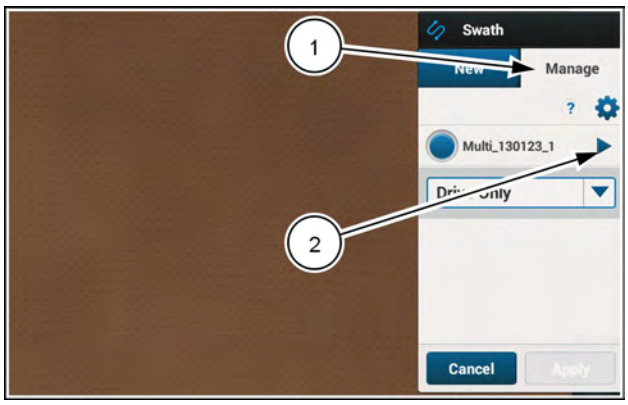
If the autoguidance disengages during MultiSwath recording, one of the following actions occurs:

- If cross-track error is less than **30 cm** (**12 in**), the system uses the exact path of the GNSS receiver to continue recording.
- If cross-track error is greater than **30 cm** (**12 in**), the system stops recording.

MultiSwath management

Access the swath “Manage” tab **(1)**. See “Swath selection” (**5-82**).

Press the arrow button **(2)** next to the MultiSwath that you wish to edit.



RAPH23PLM0102AA 42

To modify the MultiSwath:

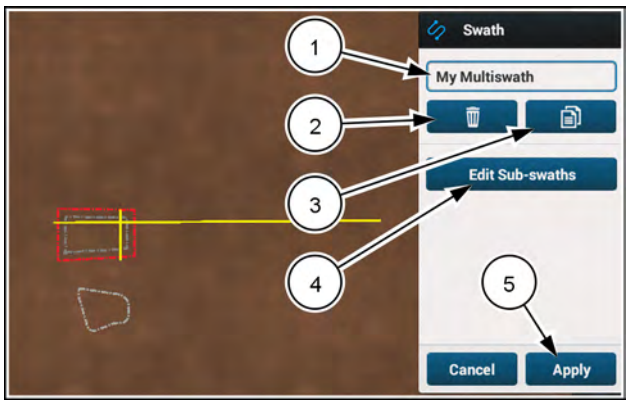
Press the box **(1)** to edit the MultiSwath name.

Press the “delete” button **(2)** to delete the MultiSwath.

Press the “copy” button **(3)** to create a copy of the Multi-Swath.

Press the “Edit Sub-swaths” button **(4)** to open the sub-swath editing panel. See Figure **44**.

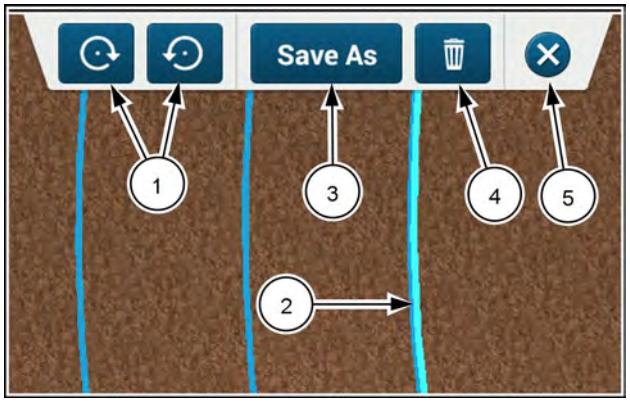
Press the “Apply” button **(5)** to accept the changes.



RAPH23PLM0026AA 43

To edit a subswath:

- Use the buttons **(1)** to cycle the selection between the available subswaths. The selected subswath **(2)** appears highlighted on the map.
- Press the “Save As” button **(3)** to create a copy of the subswath.
- Press the “delete” button **(4)** to delete the subswath.
- Press the “close” button **(5)** to return to the swath “Manage” tab.

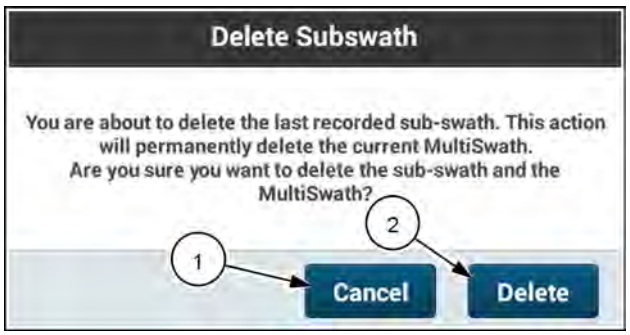


NHIL20PLM0145AA 44

If during subswath editing you attempt to delete the last remaining subswath in a multiswath, a window appears advising you of this. Deleting the last subswath in a mulitswath deletes the entire multiswath.

Press the “Cancel” button **(1)** to cancel the subswath deletion.

Press the “Delete” button **(2)** to delete the subswath and the entire multiswath.

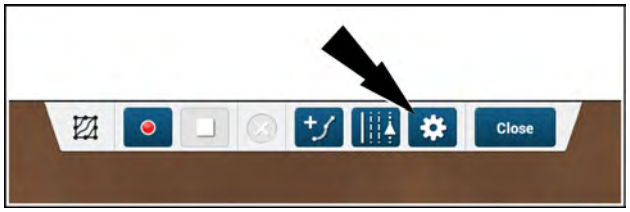


RAPH23PLM0022AA 45

MultiSwath Settings

Press the “gear” button on the swath editing panel. The “MultiSwath Settings” window appears.

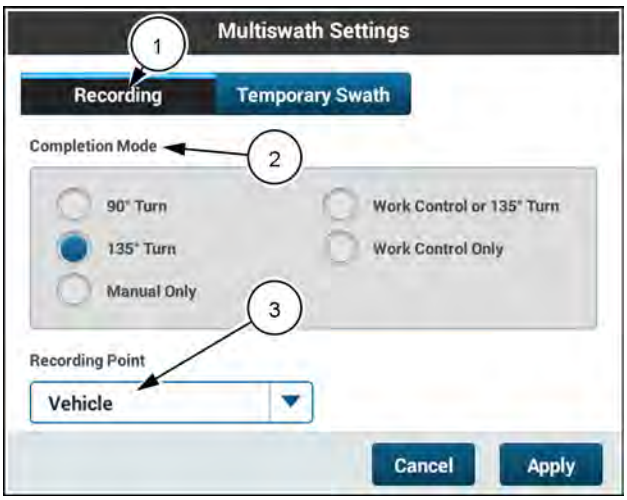
NOTE: *The MultiSwath settings can also be accessed from the swath “Manage” tab by pressing on the “gear” icon.*



RAPH21PLM1042AA 46

Adjust the recording settings on the “Recording” tab **(1)**:

- Select your “Completion Mode” trigger **(2)**, if you wish to change the completion mode from that which you defined when you created the MultiSwath.
- Change the “Recording Point” setting **(3)**, to record the subswath either at the vehicle or at the implement.



RAPH23PLM1001BA 47

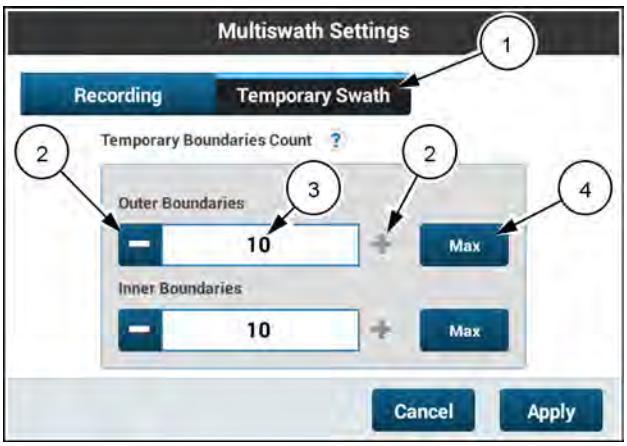
Adjust the temporary boundary settings on the “Temporary Swath” tab **(1)**:

Press the increment buttons **(2)** to adjust the number of temporary outer and inner boundaries that are created when you press the “temporary boundary” button from the swath edit panel.

NOTE: *You can also press and hold the value box* ***(3)*** *to bring up a keypad and enter the value.*

Press the “Max” button **(4)** to select the upper limit of temporary boundaries.

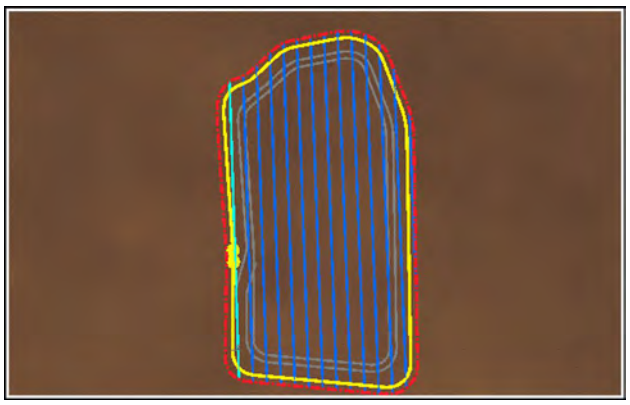
Press the “Apply” button to save your changes and return to the swath editing panel.



RAPH23PLM1002BA 48

Field swath

Use the field swath function to create a swath pattern that consists of multiple guidance lines. The interior pattern can be created as a new swath or generated from an existing swath in the field.



RAPH23PLM0027AA 1

To manage different guidance patterns in a field swath, different field swath modes are defined and each mode is responsible for the corresponding guidance pattern.

The field swath function supports the following modes:

Headland modes:

- Spiral
- Closed
- Square

Field mode:

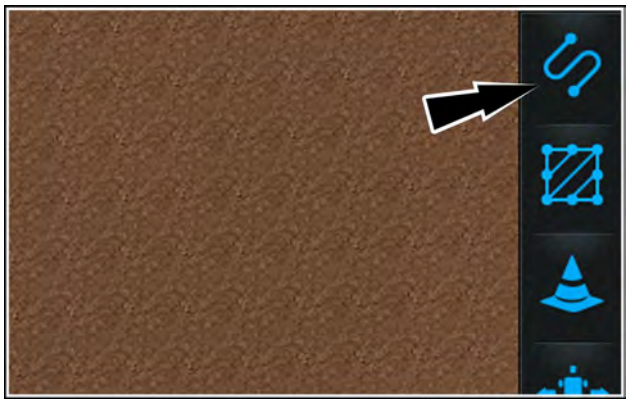
- Infill – Straight
- Infill – Curve
- Infill – Previously recorded

If you change the mode, the system discards the current generated pattern and creates a new pattern based upon the newly selected mode. The system does not allow changing the mode while guidance is engaged.

For headland patterns, you can define the number of desired headland swaths. The default value of the headland count is three, however you can change it to any value between 1 and 10.

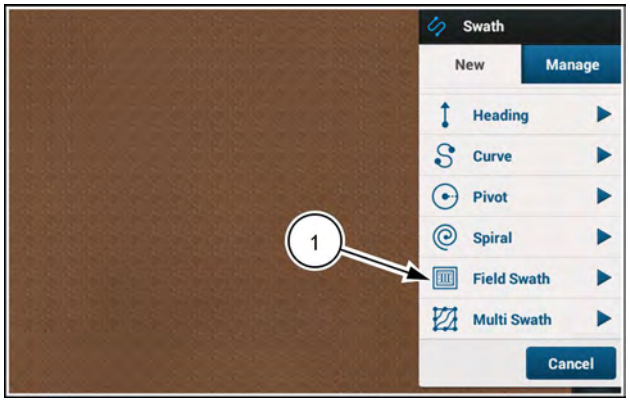
For closed, spiral, and square headland modes, additional swaths can only be generated toward the inside of the pattern. The number of generated swaths is equal to the headland count.

In the right-hand menu, press the “Swath” icon.



NHIL20PLM0086AA 2

Press the “Field Swath” swath selection **(1)**. The “Field Swath” menu appears.



RAPH23PLM0001AA 3

Create a field swath using boundary mode

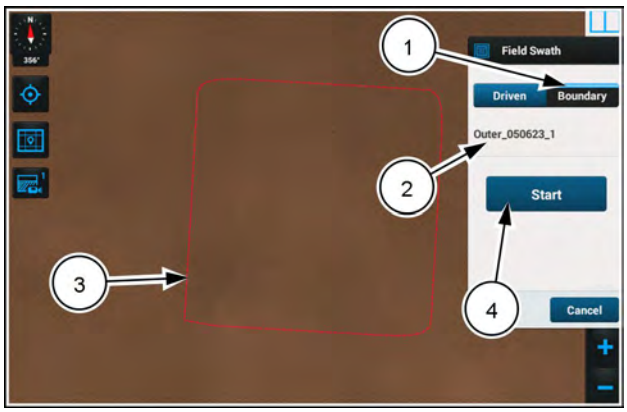
To use a pre-recorded field boundary as the headland swath, press the “Boundary” button **(1)** in the “Driven/ Boundary” toggle button.

When only one boundary is available, the boundary **(2)** appears in the “Field Swath” menu. If multiple outer boundaries are in the system, there is a drop-down menu with all the boundaries available for this particular field.

By default, the last recorded boundary **(3)** appears. The map zooms as necessary to center the outer boundary within the boundaries of the map.

Press the “Cancel” button at any time to close the “Field Swath” menu without recording.

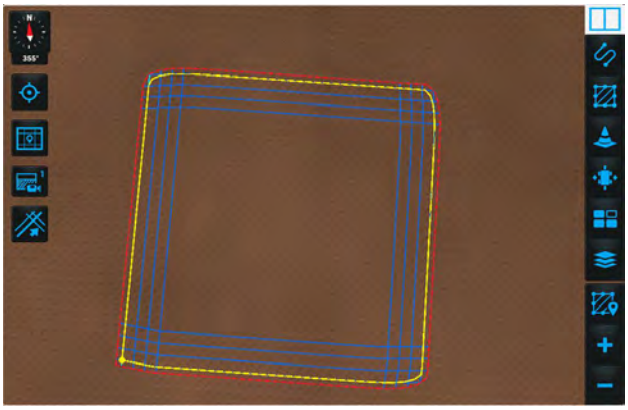
Press the “Start” button **(4)** to create a field swath using the existing boundary.



NHPH23PLM1266AA 1

The headland field swath is created and appears on the map.

NOTE: *Field swath creation defaults to “Square” mode. You can change the type of field swath after it is created.*



NHPH23PLM1326AA 2

Field swath creation errors

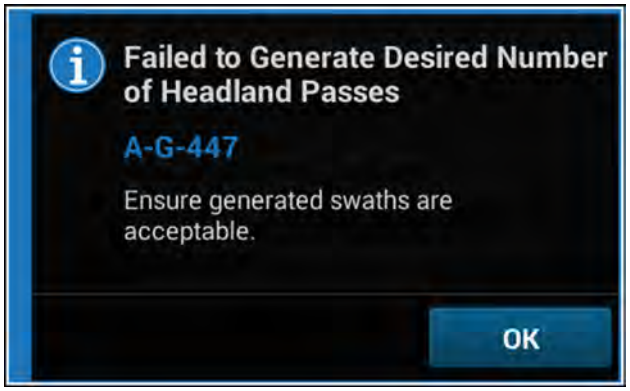
If the turns are tight enough to cause the implement to overrun them, an information message appears. The message states:

“The shape of the swath has been adjusted for the turns to meet the minimum turning radius setting. This can change the recorded swath significantly on turns. Watch for obstructions.”

RAIL19PLM0177AA 3

If the field swath cannot generate enough map lines for the implement to cover the entire field, an information message appears. This occurs when the turn radius setting is too large for the field. The message states:

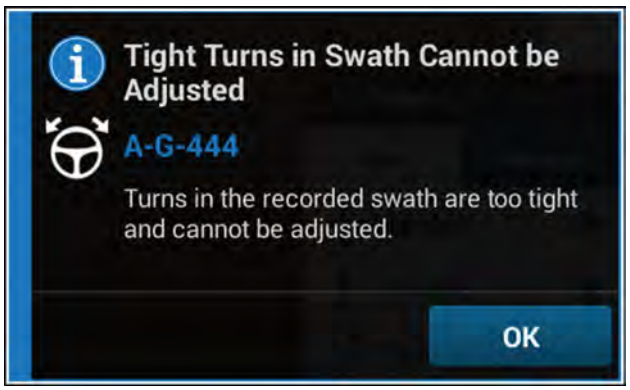
“Failed to Generate Desired Number of Headland Passes. Ensure generated swaths are acceptable.”



RAIL19PLM0179AA 4

If the field swath cannot be made because the turns are too tight for the turn radius setting and the field, an information message appears. The message states:

“Tight Turns in Swath Cannot be Adjusted. Turns in the recorded swath are too tight and cannot be adjusted.”

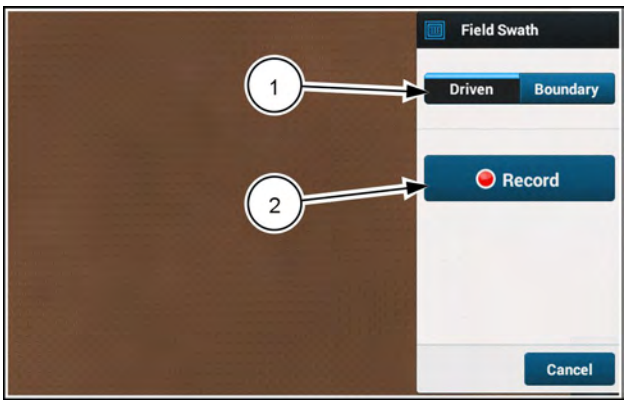


RAIL19PLM0180AA 5

NOTE: *For more information on adjusting the turning radius, see “Swath minimum turning radius” (**5-93**).*

Create a field swath using driven mode

When you select “Field Swath” and there is no outer boundary available, “Driven” mode is the default and the toggle button **(1)** is disabled.



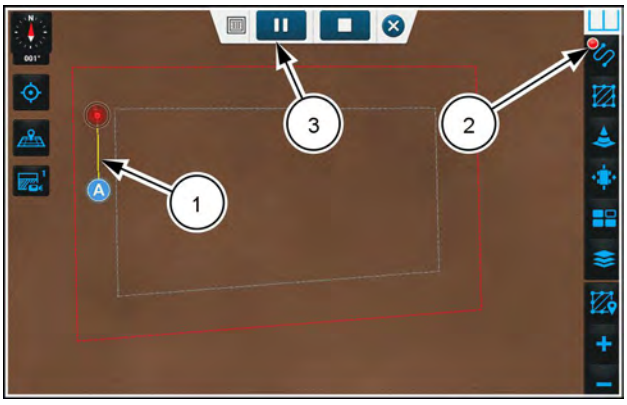
RAPH23PLM0030AA 1

If using the “Driven” method to create a field swath, drive the vehicle to an appropriate point on the perimeter of the field. Position the vehicle as though this is a working pass through the headland area of the field.

Press the “Record” button **(2)**. Drive the vehicle to record the headland swath.

Press the “Cancel” button to close the “Field Swath” menu without recording.

The following actions occur when you begin recording a field swath in “Driven” mode:



RAPH23PLM0031AA 2

- The swath recording starts immediately at the position of the vehicle. A field swath line **(1)** starts following the vehicle.
- The “Field Swath” menu closes.
- The right hand menu reappears as soon as the “Field Swath” menu finishes closing.
- A recording indicator **(2)** appears on the top left corner of the “Swath” icon in the right-hand menu.
- The edit panel **(3)** with the field swath recording options appears at the top of the map.

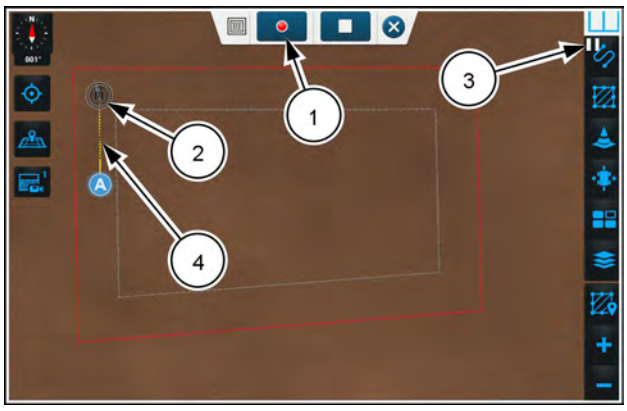
You can pause recording. Pausing allows you to record a perfectly straight line between the points where you pause recording and resume recording. For example, you can pause recording at the four corners of a rectangular field so that you can make a rectangular swath that has four straight calculated edges.

RAPH23PLM0032AA 3

If you wish to pause recording so you can resume recording at a specific location, press the “Pause” button.

The “Pause” button becomes a “Record” button **(1)** in the edit panel.

The annotations on the vehicle symbol **(2)** and the swath icon **(3)** in the map become “Pause” symbols.



RAPH23PLM0033AA 4

Drive to the location where you wish to resume recording. A yellow dashed line **(4)** appears, tracing a straight line from the point where you paused recording to the current location.

When you reach the location where you wish to resume recording, press the “Record” button **(1)**.

The dashed line becomes a solid line that is added to the recorded swath.

When you stop a recording, the software completes the swath by placing a solid yellow line between the current location of the vehicle and the point at which you started recording.

For example, you can use the pause function to create the first three edges of a rectangular swath, and then use the stop function to complete the fourth edge of the rectangular swath.

When you reach the location where you wish to stop recording, press the "Stop" button.

The software completes the swath by connecting the current location to the point where you began recording.

The swath edit panel and the swath menu are removed from the map.

After you finish recording the field swath in “Driven” mode:

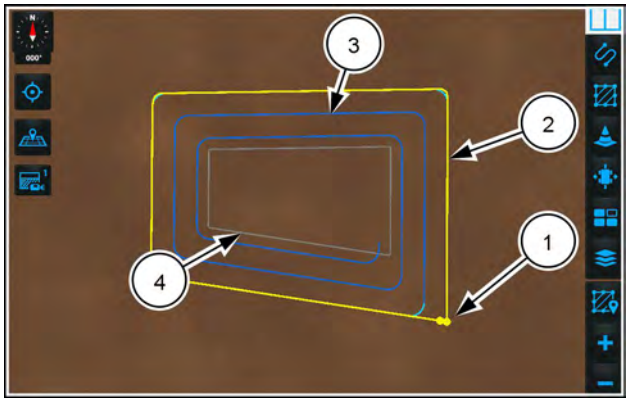
- Points “A” and “B” **(1)** appear in the map as yellow dots.
- The recorded swath **(2)** appears yellow.
- Blue guidance lines **(3)** parallel to the swath appear.
- A gray headland line **(4)** appears as the innermost guidance line. The gray guidance line is the border for swaths that complete the field swath pattern after you finish configuring the field swath.

If you press the “close” button **(1)** in the edit panel, a “Confirm” window appears.

In the “Confirm” window, press the “Yes” button **(2)** to confirm the cancellation and close the window. The recorded swath is removed from the map.

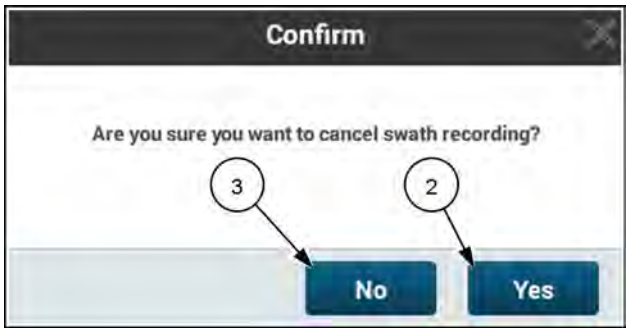
In the “Confirm” window, press the “No” button **(3)** to close the “Confirm” window. You can continue recording the swath.

RAIL18PLM1731AA 5



RAPH23PLM0035AA 6

RAIL18PLM1731AA 7



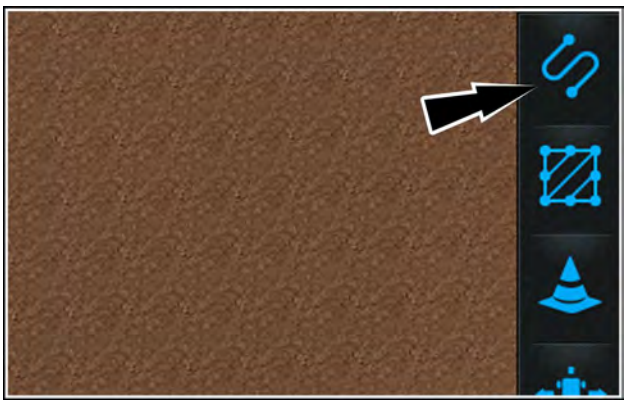
RAIL18PLM1730AA 8

Edit an existing field swath

If you choose to edit the currently selected swath, you can perform the following actions:

- Rename the field swath
- Make a copy of the field swath
- Delete the field swath
- Change the minimum turn radius
- Modify the headland mode
- Modify the headland properties
- Modify the infill pattern

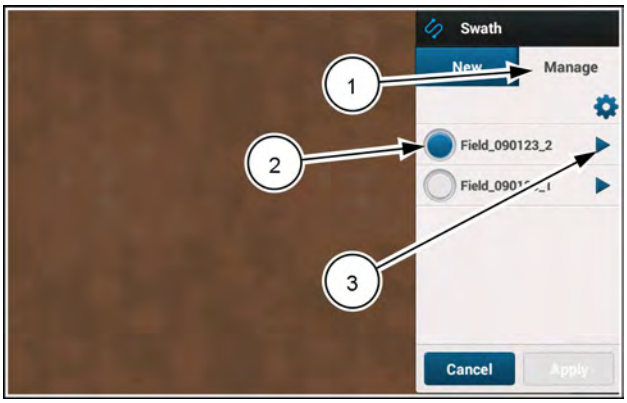
In the right-hand menu, press the “Swath” icon.



NHIL20PLM0086AA 1

To edit an existing field swath, press the “Manage” tab **(1)**. Select the desired field swath by pressing its radio button **(2)**.

Press the arrow **(3)** next to the desired swath to open its editing menu.



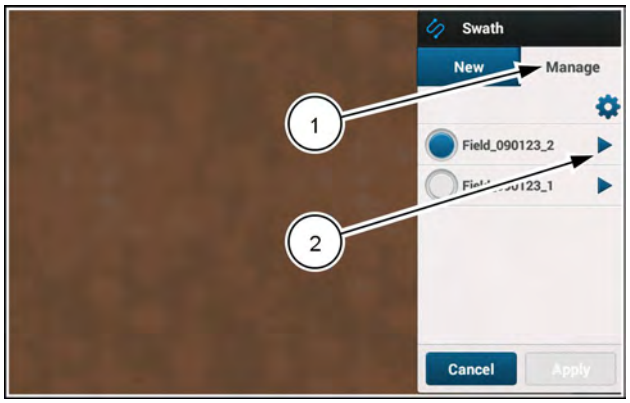
RAPH23PLM0040AA 2

Field swath - closed headland

Use “Closed” mode when you wish to farm the headland portion of the field in separate closed-parallel swaths. In “Closed” mode, the transition from one swath to another must be driven manually by the user. The number of default headland swaths in “Closed” mode is equal to the count you select when you set up the swath.

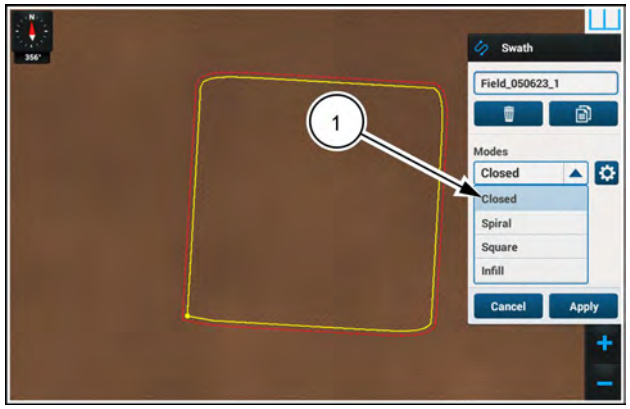
To edit an existing field swath in closed headland mode, access your field swaths on the swath “Manage” tab **(1)**.

Press the arrow **(2)** next to the desired field swath to open the swath edit menu.



RAPH23PLM0040AA 1

Press the “Modes” drop-down menu and select the “Closed” **(1)** mode.

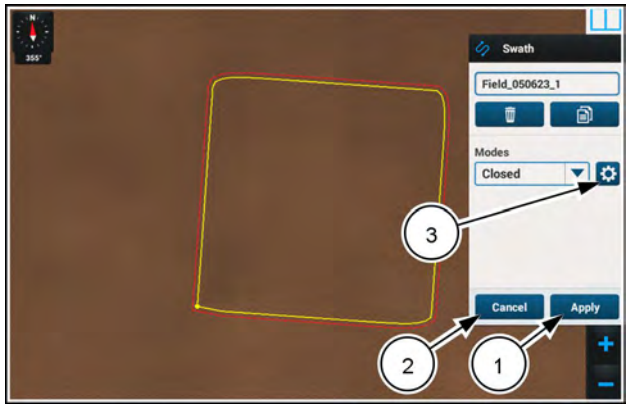


NHPH23PLM1269AA 2

Press the “Apply” button **(1)** if you wish to apply the default closed headland field swath to the field.

Press the “Cancel” button if you wish to discard changes and exit.

Press the “gear” button **(2)** to edit the field swath in “Closed” mode.



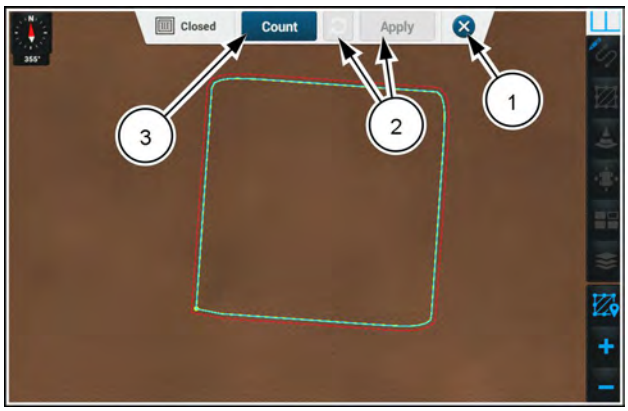
NHPH23PLM1307AA 3

The “Closed” mode edit panel allows you to change the headland count for the field swath.

If you do not wish to make any changes, press the “X” button **(1)** at any time to close the edit panel and exit.

The “Apply” and “restart” buttons **(2)** remain inactive until you make changes.

Press the “Count” button **(3)** to open the headland count window.



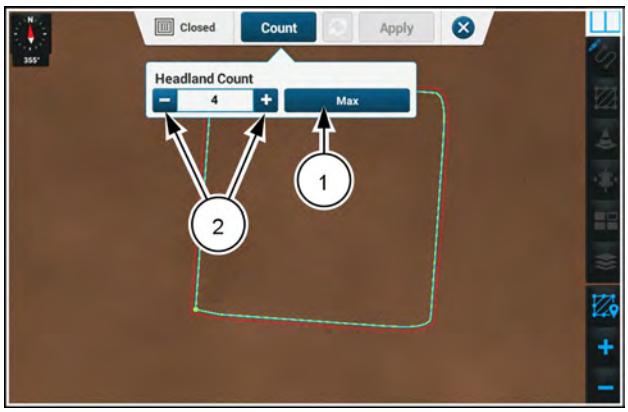
NHPH23PLM1302AA 4

Use the “Headland Count” value to establish the number of headland swaths in your field swath.

Press the “Max” button **(1)** at any time to increase the count to ten.

NOTE: *If the recorded swath is too small to allow the selected number of headland swaths, the software automatically changes the headland count to the maximum number that can fit.*

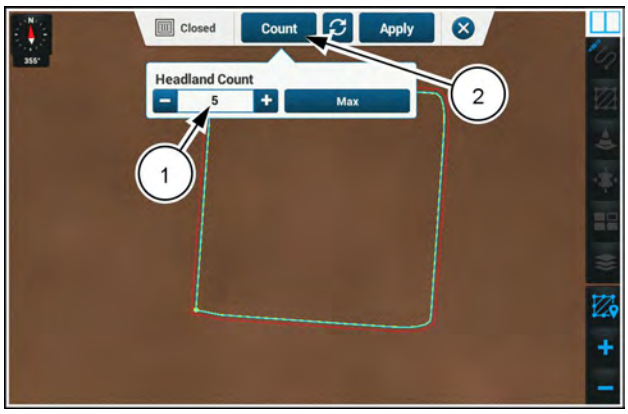
Press the “Plus” or “Minus” buttons **(2)** to adjust the headland count.



NHPH23PLM1303AA 5

The “Headland Count” **(1)** has been increased.

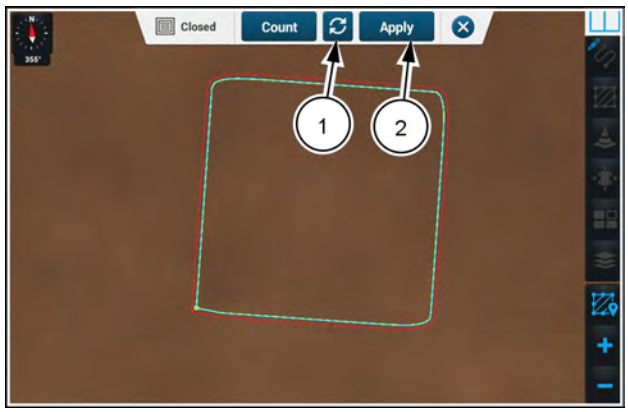
Press the “Count” button **(2)** to close the headland count window.



NHPH23PLM1304AA 6

The “restart” button **(1)** is now active if it is necessary to undo your changes and restart.

Press the “Apply” button **(2)** to apply the changes to the closed headland.



NHPH23PLM1305AA 7

To confirm the changes made to the closed field swath, a confirmation window displays:

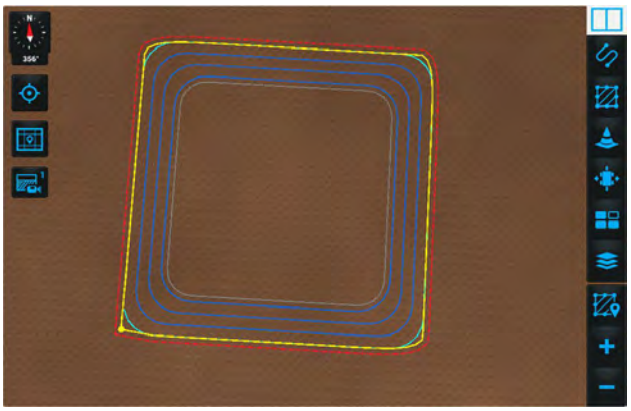
“You are about to apply changes made to Field Swath. Are you sure you want to apply?”

Press the “Yes” button **(1)** to apply the changes and exit.

Press the “No” button **(2)** to return to the edit panel

NHPH23PLM1268AA 8

The closed headland field swath is ready to use.



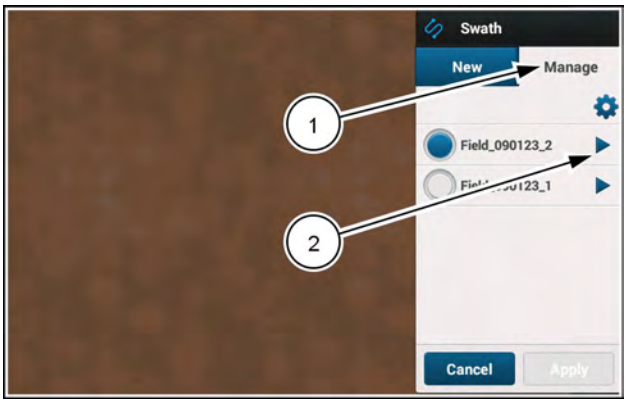
NHPH23PLM1270AA 9

Field swath - spiral headland

Use “Spiral” mode when you wish to farm the headland portion of the field in a continuous spiral. In “Spiral” mode, if the system is engaged and the vehicle reaches the end of generated swath, the system transitions to the next generated swath automatically.

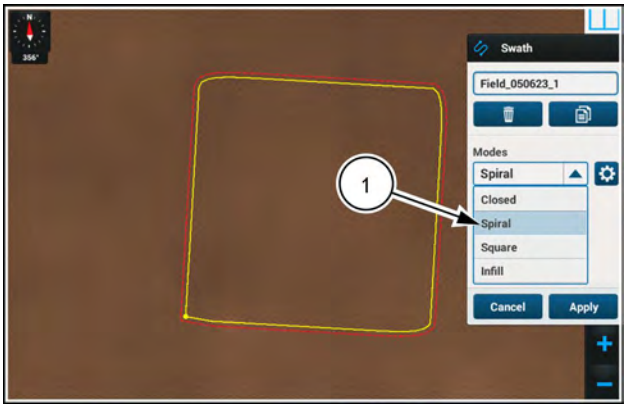
To edit an existing field swath in spiral headland mode, access your field swaths on the swath “Manage” tab **(1)**.

Press the arrow **(2)** next to the desired field swath to open the swath edit menu.



RAPH23PLM0040AA 1

Press the “Modes” drop-down menu and select the “Spiral” mode **(1)**.

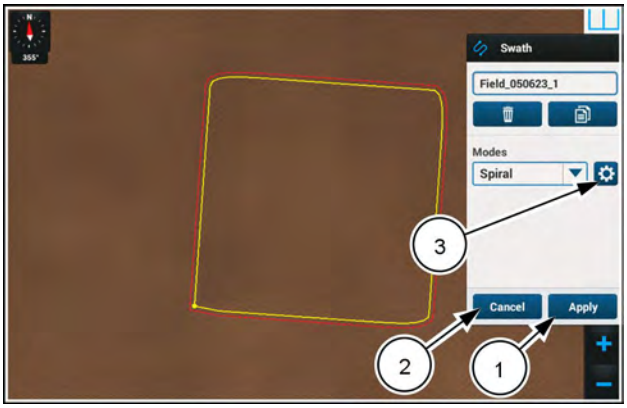


NHPH23PLM1271AA 2

Press the “Apply” button **(1)** if you wish to apply the default closed headland field swath to the field.

Press the “Cancel” button **(2)** if you wish to discard changes and exit.

Press the “gear” button **(3)** to edit the field swath in “Spiral” mode.



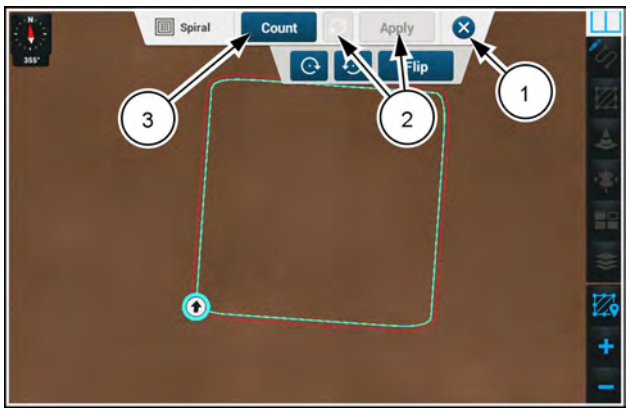
NHPH23PLM1308AA 3

The “Spiral” mode edit panel allows you to change the headland count for the field swath, as well as the heading and position of your starting and ending points.

If you do not wish to make any changes, press the “X” button **(1)** at any time to close the edit panel and exit.

The “Apply” and “restart” buttons **(2)** remain inactive until you make changes.

Press the “Count” button **(3)** to open the headland count window.



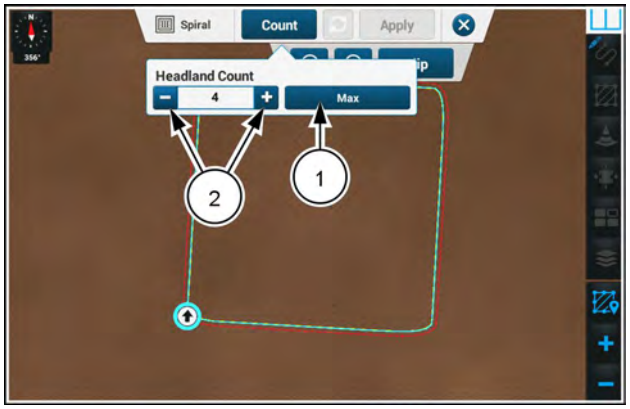
NHPH23PLM1312AA 4

Use the “Headland Count” value to establish the number of headland swaths in your field swath.

Press the “Max” button **(1)** at any time to increase the count to ten.

NOTE: *If the recorded swath is too small to allow the selected number of headland swaths, the software automatically changes the headland count to the maximum number that can fit.*

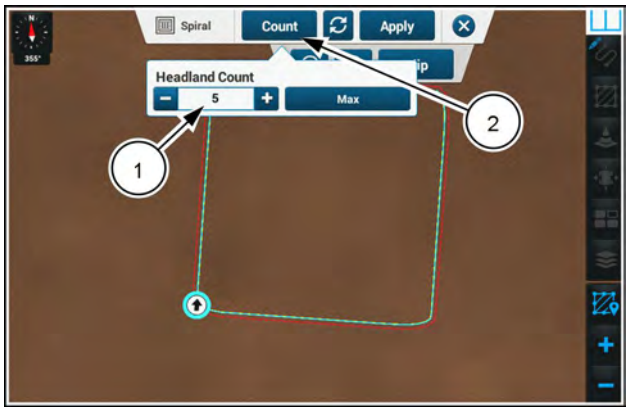
Press the “Plus” or “Minus” buttons **(2)** to adjust the headland count.



NHPH23PLM1276AA 5

The “Headland Count” **(1)** has been increased.

Press the “Count” button **(2)** to close the headland count window.



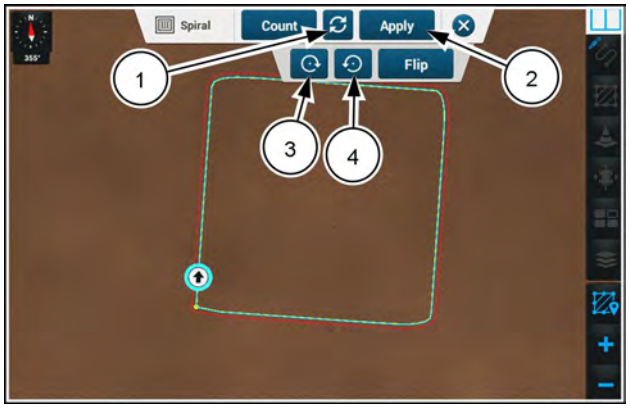
NHPH23PLM1313AA 6

The “restart” button **(1)** is now active if it is necessary to undo your changes and restart.

The “Apply” button **(2)** is now active if you want to apply the changes and exit.

Press the button **(3)** to move the start point clockwise around the headland.

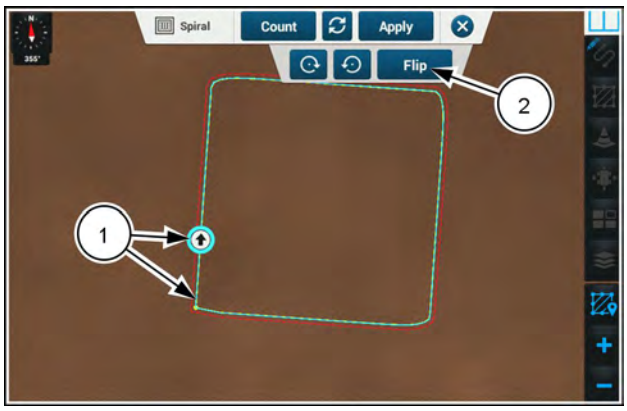
Press the button **(4)** to move the start point counterclockwise around the headland.



NHPH23PLM1311AA 7

The starting point **(1)** has moved clockwise along the boundary.

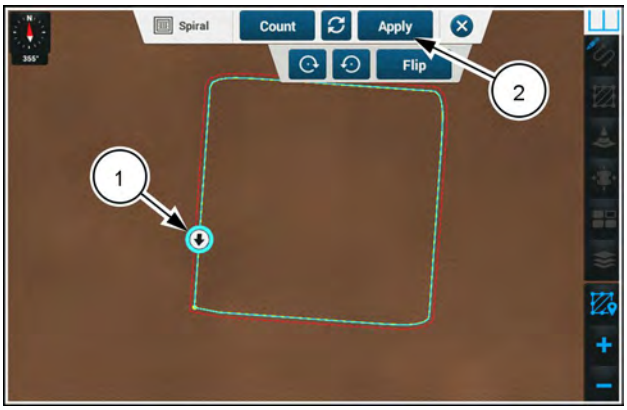
Press the “Flip” button **(2)** to change the direction of the start point.



NHPH23PLM1309AA 8

The direction of the start point **(1)** has been flipped.

Press the “Apply” button **(2)** to apply the changes to the closed headland.



NHPH23PLM1310AA 9

To confirm the changes made to the closed field swath, a confirmation window displays:

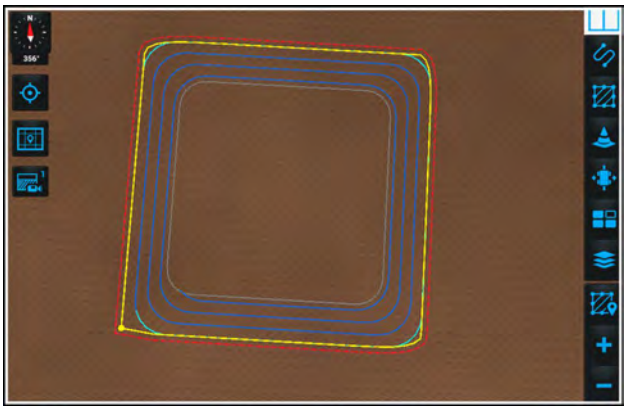
“You are about to apply changes made to Field Swath. Are you sure you want to apply?”

Press the “Yes” button **(1)** to apply the changes and exit.

Press the “No” button **(2)** to return to the edit panel

NHPH23PLM1268AA 10

The spiral headland field swath is ready to use.



NHPH23PLM1274AA 11

Field swath - square headland

One option to work the headland portion of a field is to work each side of the headlands separately. Square mode allows working the corners of the field, achieving a right angle with no radius. In square mode you make manual turns at the end of each swath.

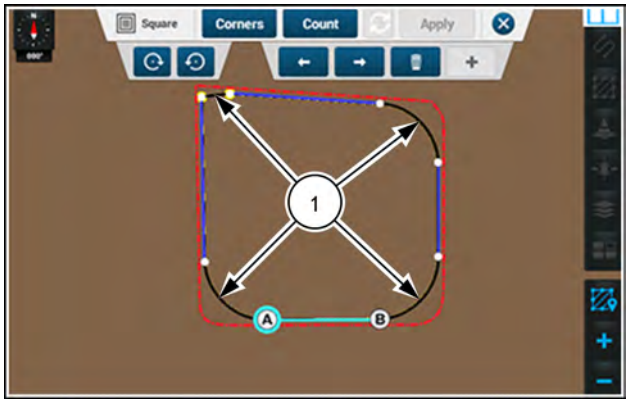
To make the guidance lines, the software uses the straight edges of the headland boundary and squares off the corners.

It is possible for a selected headland swath to have a corner with a turn radius that is lower than the configured minimum turn radius in the software. In “Square” mode, this is compensated for by the software. If a corner that is smaller than the minimum corner radius exists, the software breaks the corner and extends the swath from a point “A” and a point “B” at each end of the resulting segment. When extending the swath beyond point “A” or point “B,” the software uses the heading of the path at the endpoints.

The pictured example has only one corner **(1)** that is smaller than the configured minimum corner radius.

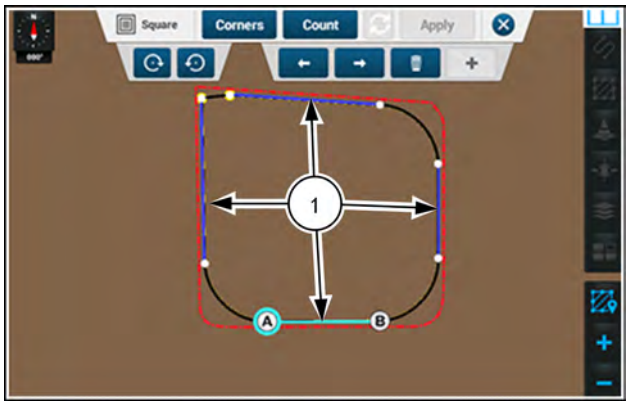
The resulting headland swath is a single segment that will extend west from point “A” and east from point “B.”

NOTE: *If you wish that your headland swath conforms more closely with the corners of a field boundary line or with the actual corners of your field, choose a smaller corner radius for the headland swath.*



RAPH23PLM0067AA 1

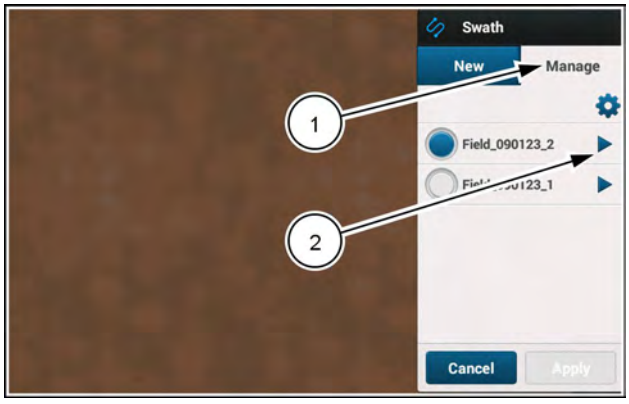
The software uses line segments **(1)** on the headland swath to define the points where the guidance lines start and end. This allows you to adjust the length of the guidance lines that will be generated by the swath.



RAPH23PLM0067AA 2

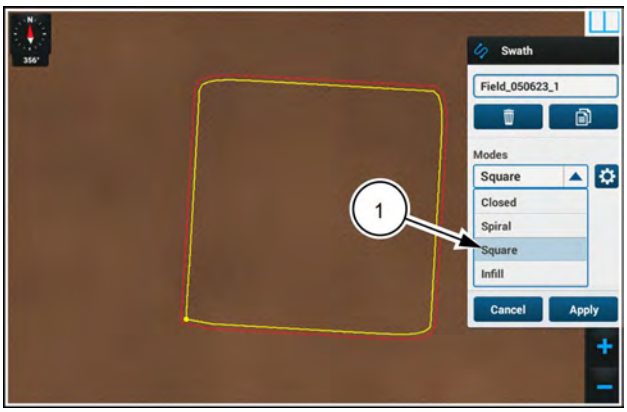
To edit an existing field swath in square headland mode, access your field swaths on the swath “Manage” tab **(1)**.

Press the arrow **(2)** next to the desired field swath to open the swath edit menu.



RAPH23PLM0040AA 3

Press the “Modes” drop-down menu and select the “Square” mode **(1)**.

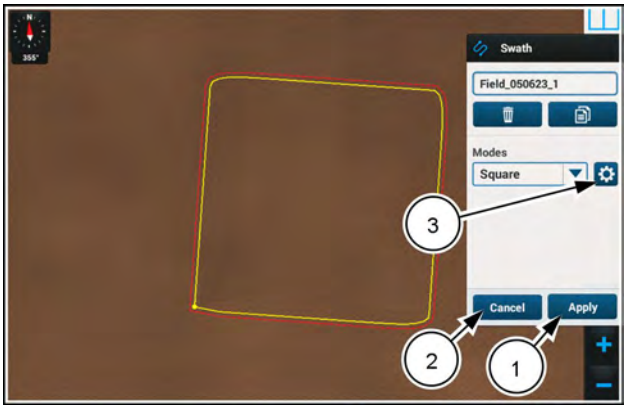


NHPH23PLM1277AA 4

Press the “Apply” button **(1)** if you wish to apply the default closed headland field swath to the field.

Press the “Cancel” button **(2)** if you wish to discard changes and exit.

Press the “gear” button **(3)** to edit the field swath in “Square” mode.



NHPH23PLM1314AA 5

The “Square” mode edit panel allows you to change the turn radius in the corners **(1)**, and the headland count **(2)** for the field swath, as well as the heading and position of your starting and ending points.

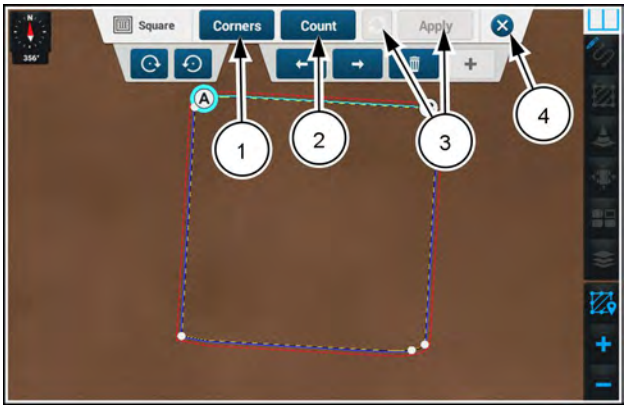
If you do not wish to make any changes, press the “X” button **(4)** at any time to close the edit panel and exit.

The “Apply and “restart” buttons **(3)** remain inactive until you make changes.

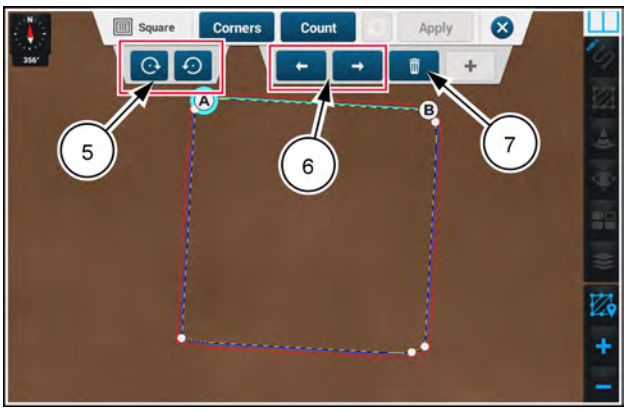
The selected end point of the swath segment can be moved in small fixed increments **(5)** clockwise or counter-clockwise.

You can select a different swath segment to edit by using the “left arrow” and “right arrow” buttons **(6)**.

Press the “delete” button **(7)** to delete the swath segment that is currently selected when there is at least two swath segments available.



NHPH23PLM1278AA 6

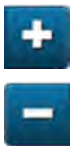


NHPH23PLM1278AA 7

Corner radius

Press the “Corners” button **(1)** to open the corner radius window.

Use the “Corner Radius” to adjust the turn radius of your vehicle in the corners of the field swath.

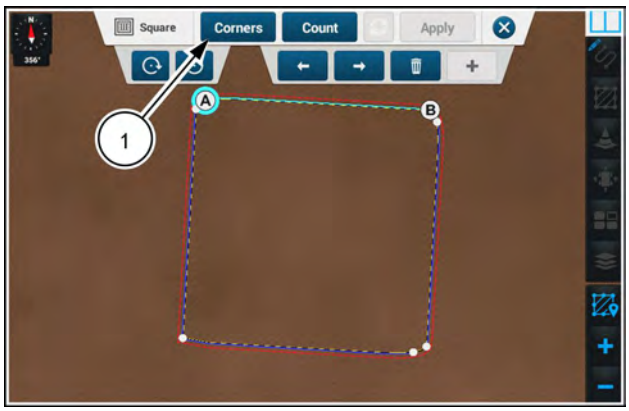


Press the “Plus” or “Minus” buttons **(2)** to adjust the turn radius.

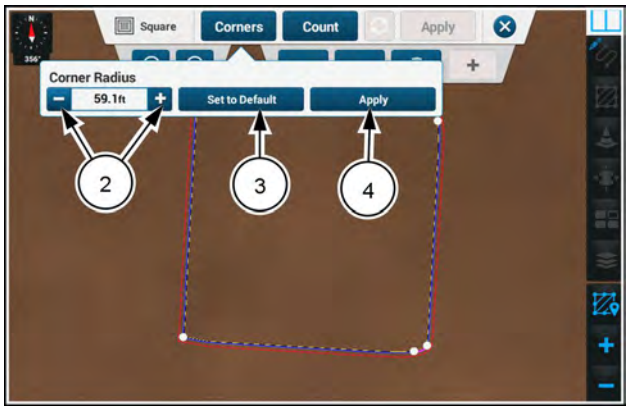
Press the “Set to Default” button **(3)** at any time to restore the corner radius to the default value.

NOTE: *To conform more closely with the corners of a field boundary line or with the actual corners of your field, choose a smaller corner radius.*

Press the “Apply” button **(4)** to save your changes.



NHPH23PLM1278AA 8

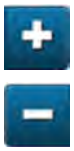


NHPH23PLM1279AA 9

Headland count

Press the “Count” button **(1)** to open the headland count window.

Use the “Headland Count” value to establish the number of headland swaths in your field swath.

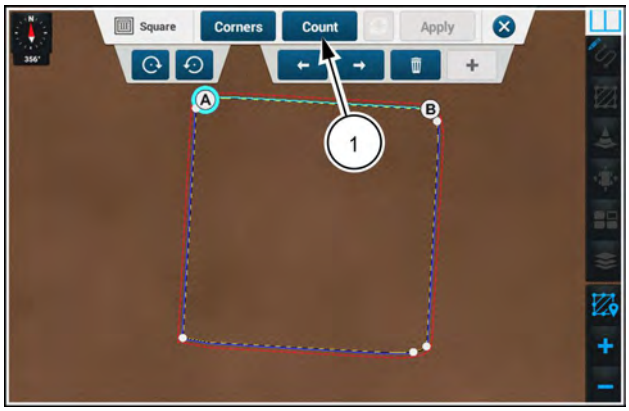


Press the “Plus” or “Minus” buttons **(2)** to adjust the turn radius.

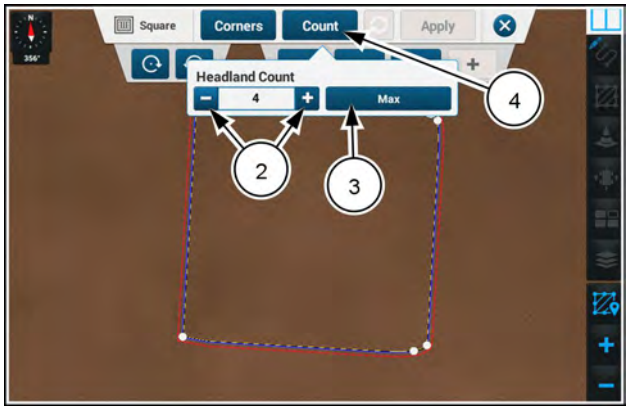
Press the “Max” button **(3)** at any time to increase the count to ten.

NOTE: *If the recorded swath is too small to allow the selected number of headland swaths, the software automatically changes the headland count to the maximum number that can fit.*

Press the “Count” button **(4)** to close the headland count window.



NHPH23PLM1278AA 10



NHPH23PLM1280AA 11

Moving swath end points

On the map, one of the headland segments appears highlighted. Endpoint A **(1)** is selected.

You can press the opposite endpoint **(2)** to select it. You can select and edit only one endpoint of a segment at a time.

The bottom edit panel provides the controls for selecting or deleting the segments, and for moving the endpoints of the segments. You can add segments if there is space for them.

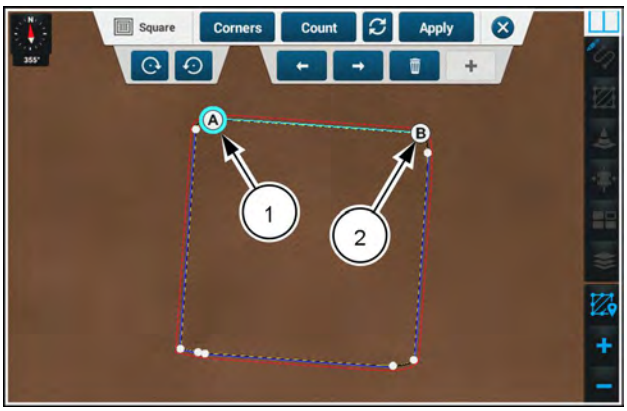
Press the button **(3)** to move the selected point around the headland in a clockwise direction.

Press the button **(4)** to move the selected point around the headland in a counterclockwise direction.

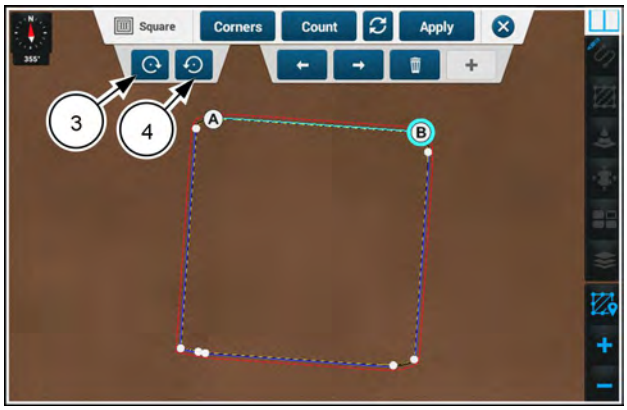
The selected point can continue be moved clockwise or counter-clockwise along the boundary until it meets another swath end point.

You can also press the recorded swath at the desired location to move the selected endpoint immediately to that location.

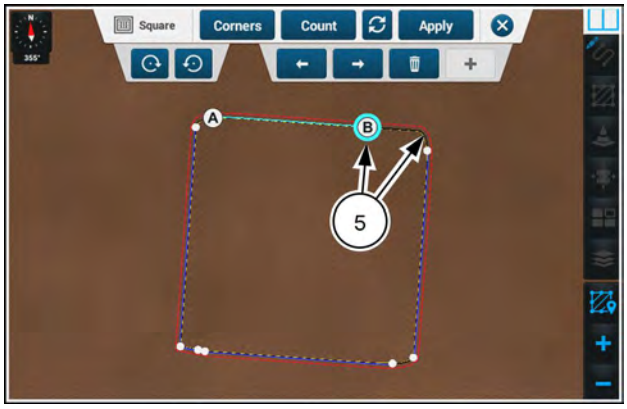
The selected end point **(5)** has been moved counter-clockwise along the boundary.



NHPH23PLM1320AA 12



NHPH23PLM1321AA 13



NHPH23PLM1322AA 14

Edit swath segments

Any swath segment can be selected by cycling through them with the “left” or “right” buttons **(1)**. You must use the buttons to change the selection.

Any changes only apply to the selected swath segment.

Press the "left" or “right” buttons **(1)** to select a different swath segment.

Any selected swath segment **(2)** can be deleted if necessary.

Press the “trash” button **(3)** to delete the selected swath segment.

When you delete a swath segment, they system automatically selects another swath segment **(1)**.

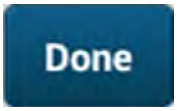
The deleted segments **(2)** are shown as black and yellow dotted lines.

If you inadvertently delete a swath segment, or wish to add a new one, you may press the “add” button **(3)** to choose a new segment to add.

NOTE: *The “add” button **(3)** is inactive until a swath segment is deleted.*

Press the “add” button **(3)** to add a new swath segment.

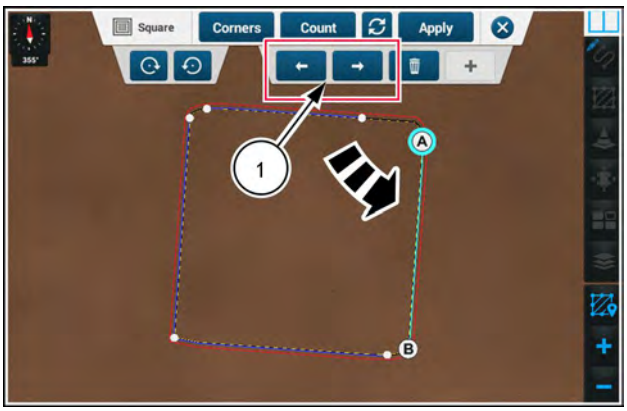
Where there is room to add a segment, the potential segments become highlighted with “plus” buttons **(4)**.



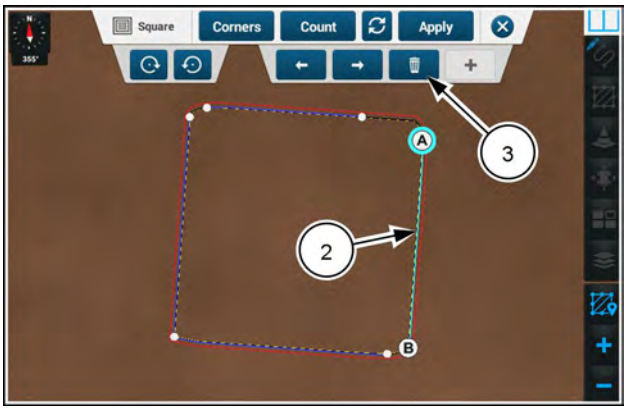
Press the “Done” button **(5)** when you are finished editing.

NOTE: *If you wish to edit any of the new swath segments, you must first add them and press the “Done” button **(5)**.*

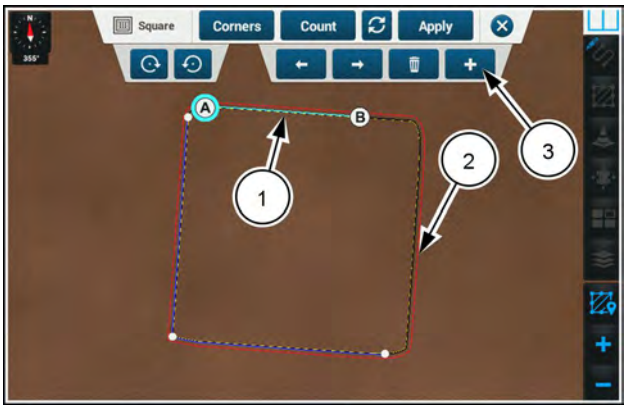
You can then move the endpoints on the new line segments as needed.



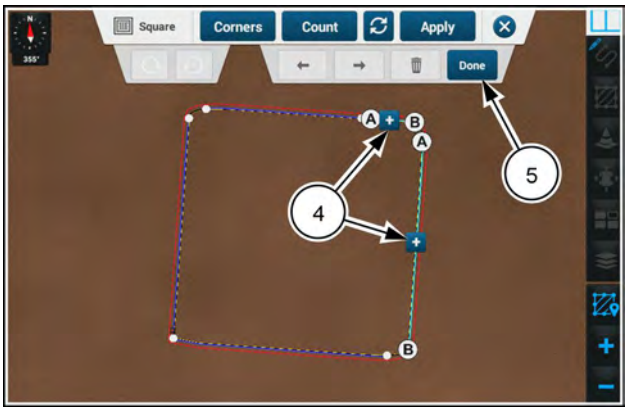
NHPH23PLM1324AA 15



NHPH23PLM1324AA 16

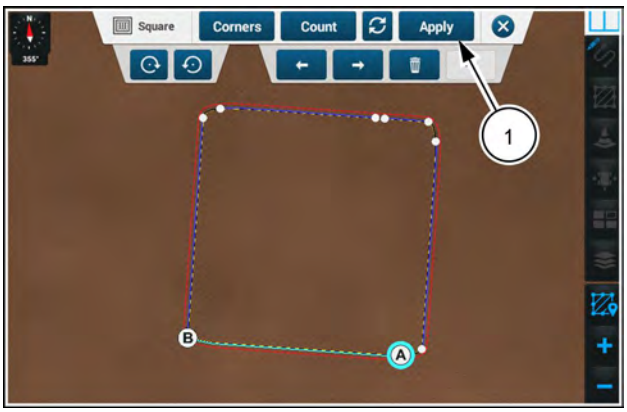


NHPH23PLM1323AA 17



NHPH23PLM1319AA 18

Press the “Apply” button **(1)** to apply the changes to the closed headland.



NHPH23PLM1325AA 19

To confirm the changes made to the closed field swath, a confirmation window displays:

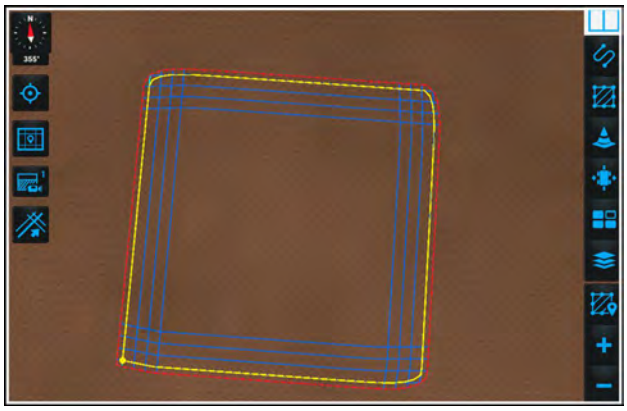
“You are about to apply changes made to Field Swath. Are you sure you want to apply?”

Press the “Yes” button **(1)** to apply the changes and exit.

Press the “No” button **(2)** to return to the edit panel

NHPH23PLM1268AA 20

The square headland field swath is ready to use.



NHPH23PLM1326AA 21

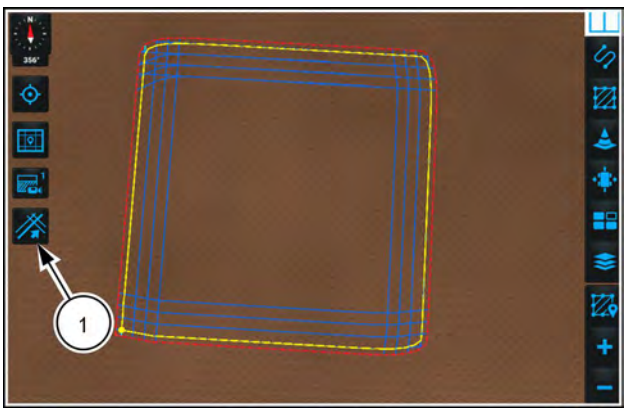
Next swath function

The next swath function **(1)** is only available in square headland mode in field swaths and in Multi-Swaths. The icon for the next swath function is visible underneath the custom map icon in the left-hand menu of a map.

The next swath function is enabled when both of the following conditions exist:

- The vehicle is within range of two swaths on which it can engage.
- Autoguidance is not engaged.

The “Next Swath” icon appears gray when the next swath function is disabled.

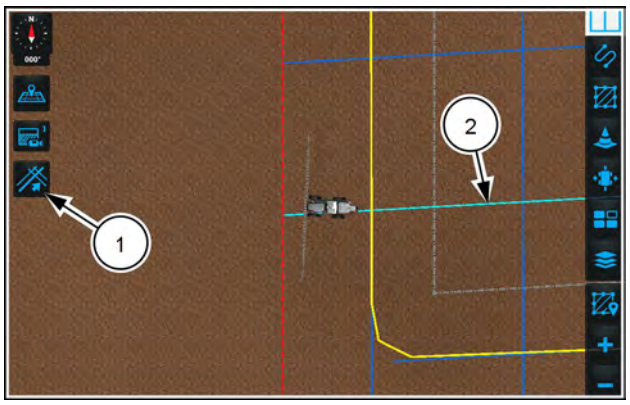


NHPH23PLM1287AA 22

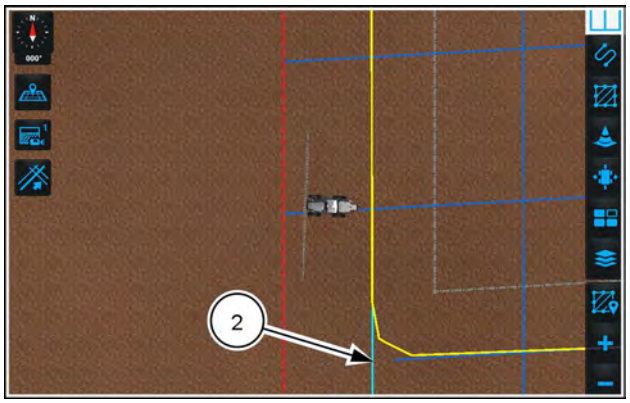
When you are within the range of two swaths that can be engaged on, the “Next Swath” icon **(1)** becomes active. The next available swath **(2)** changes color to highlight it.

You can also press the next swath **(2)** on the map to choose the swath.

If you are within range of more than one swath, you can press the “Next Swath” icon **(1)** repeatedly to cycle between the swaths.



RAPH23PLM0041AA 23



RAPH23PLM0042AA 24

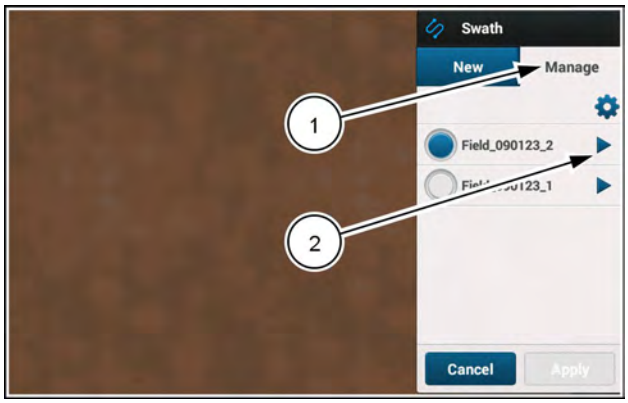
Field swath - infill

The infill modes provide the means of building a swath pattern inside of a boundary and headland swath. There are three types of swaths you can use to start your infill swaths:

- Straight
- Curved
- Previously recorded

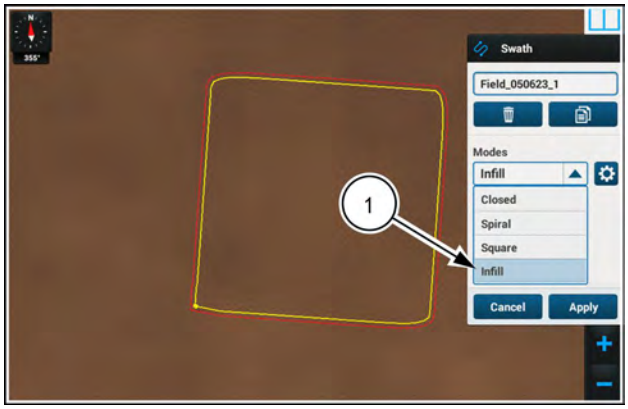
To edit an existing field swath in infill headland mode, access your field swaths on the swath “Manage” tab **(1)**.

Press the arrow **(2)** next to the desired field swath to open the swath edit menu.



RAPH23PLM0040AA 1

Press the “Modes” drop-down menu and select the “Infill” mode **(1)**.

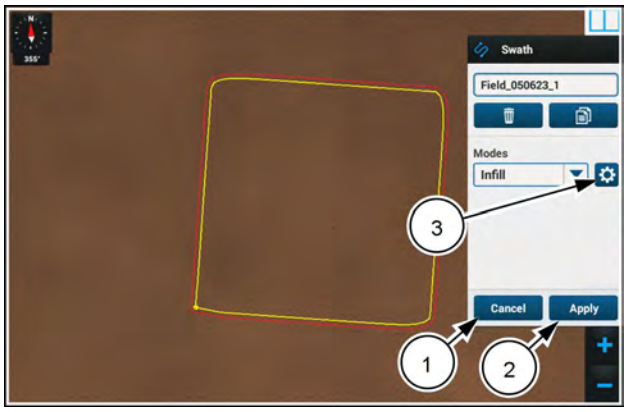


NHPH23PLM1327AA 2

Press the “Apply” button **(1)** if you wish to apply the default infill headland field swath to the field.

Press the “Cancel” button **(2)** if you wish to discard changes and exit.

Press the “gear” button **(2)** to edit the field swath in “Infill” mode.



NHPH23PLM1328AA 3

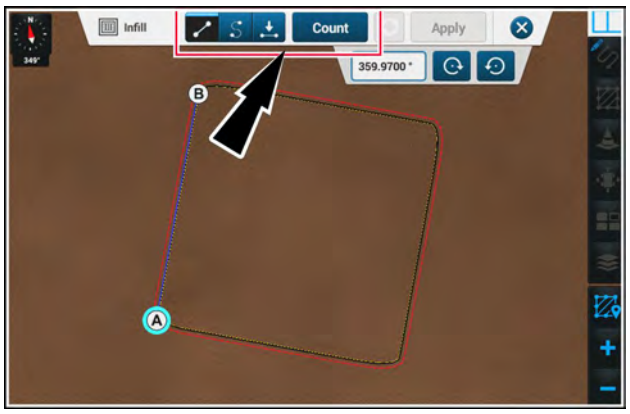
The “Infill” edit panel consists of the controls listed below. Each infill mode has its own secondary edit panel.

“Straight” – Use a straight swath to build infill swaths.

“Curved” – Use a curved swath to build infill swaths.

“Previously recorded” – Use a previously-recorded swath to build infill swaths.

“Count” is available in all modes to change the number of headland swaths in the field swath.



NHPH23PLM1290AA 4

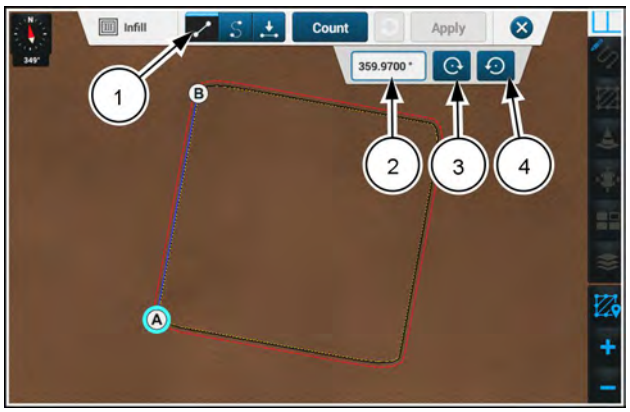
Straight infill swath

Press the “Straight” button **(1)**. The straight swath edit panel appears.

Press the heading field **(2)** to adjust the heading of your straight swath.

Press the button **(3)** to move the selected point around the headland in a clockwise direction.

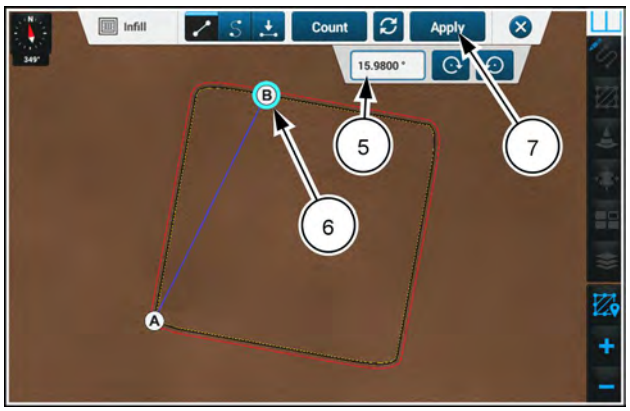
Press the button **(4)** to move the selected point around the headland in a counterclockwise direction.



NHPH23PLM1290AA 5

To adjust the straight swath to the desired location and heading, move points A and B. You can move point A and point B of the swath by pressing the desired locations on the swath, or by using the “clockwise” or “counterclockwise” buttons.

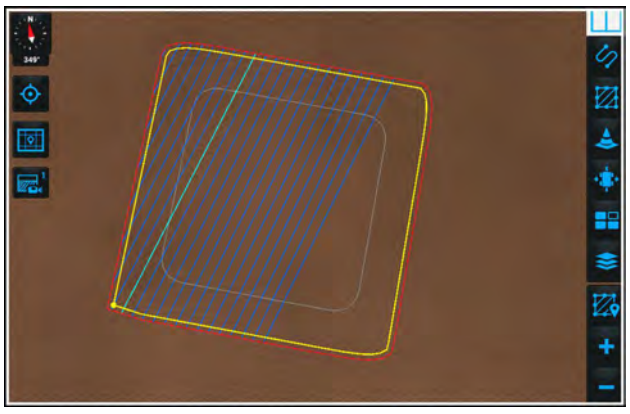
You can also use the straight swath edit panel to change the heading. Press the Heading field **(5)** to bring up a numeric keypad. Enter the desired heading. The software moves the selected endpoint **(6)** as needed to give the line segment the entered heading.



NHPH23PLM1291AA 6

Press the “Apply” button **(7)** to apply the changes to the straight infill field swath.

The straight infill field swath is ready to use.



NHPH23PLM1292AA 7

Curved infill swath

Use a curved infill swath to create a curve that runs along the recorded swath.

Press the “Curved” button **(1)**. The curved swath edit panel appears.

You can switch to curved mode any time while you are editing an infill swath. When you switch from straight mode to curved mode, points A and B on the swath remain in their current position.

NOTE: *You cannot cause a curved swath to overlap itself.*

Press the button **(3)** to move the selected point around the headland in a clockwise direction.

Press the button **(4)** to move the selected point around the headland in a counterclockwise direction.

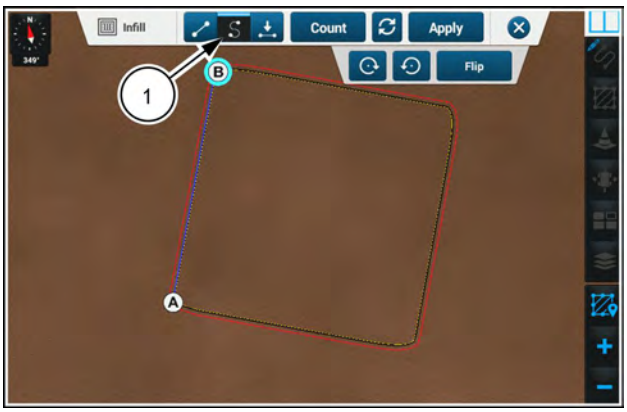
Press the “Flip” button **(4)** to swap points A and B. This also changes the curved segment to the opposite sections of the swath.

Press the “flip” button **(4)** to flip the swath segment.

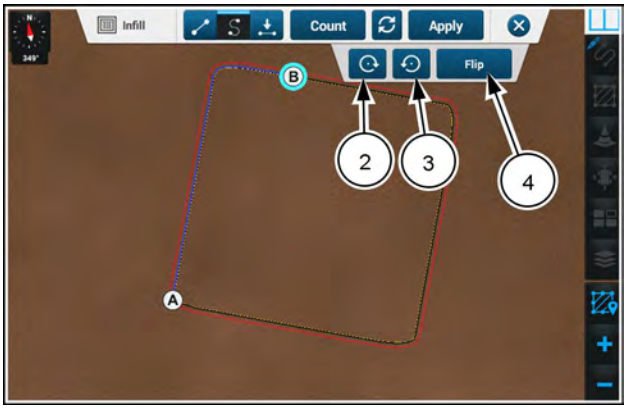
The end points switch position **(5)** and the swath segment is flipped **(6)**.

Press the “Apply” button **(7)** to apply the changes to the curved infill field swath.

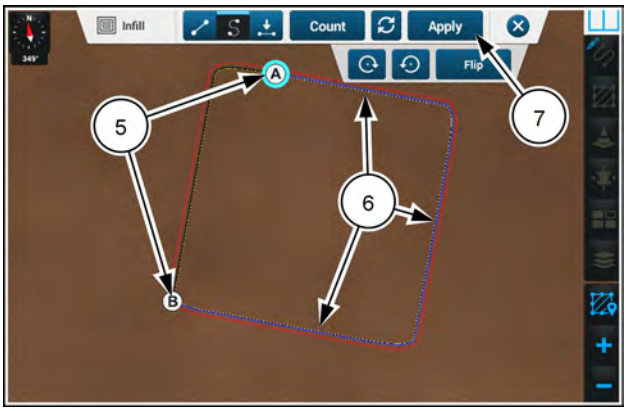
The curved infill field swath is ready to use.



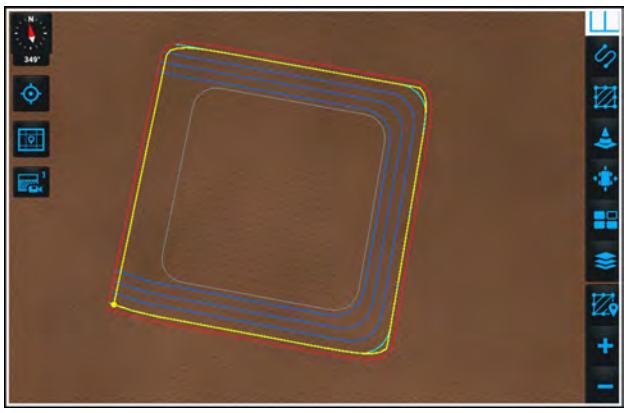
NHPH23PLM1294AA 8



NHPH23PLM1295AA 9



NHPH23PLM1296AA 10



NHPH23PLM1298AA 11

Infill swath from previously recorded swath

You can make an infill swath from a previously recorded swath.

Press the “Previously Recorded” button **(1)**. The swath edit panel appears.

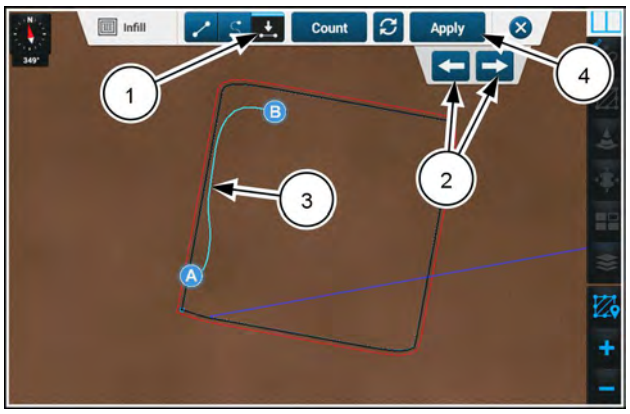
The “Previously Recorded Swath” recording appears. Any previously recorded AB, heading, or curve swaths in the selected field appear on the map.

Press the "left" or “right” buttons **(2)** to select a different previously recorded swath.

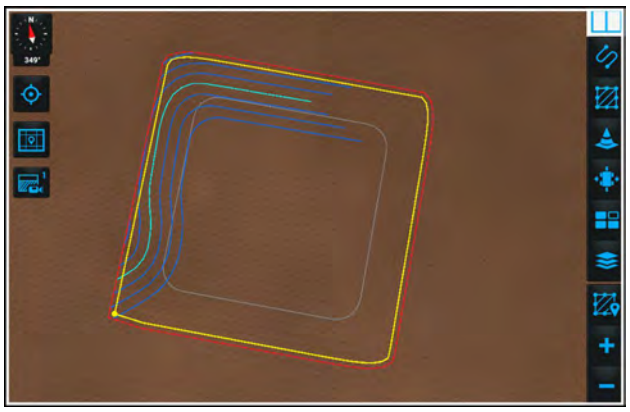
The selected swath **(3)** is highlighted.

Press the “Apply” button **(4)** to apply the changes to the previously recorded infill field swath.

The previously recorded infill swath is ready to use.



NHPH23PLM1299AA 12



NHPH23PLM1301AA 13

Multiple recordings

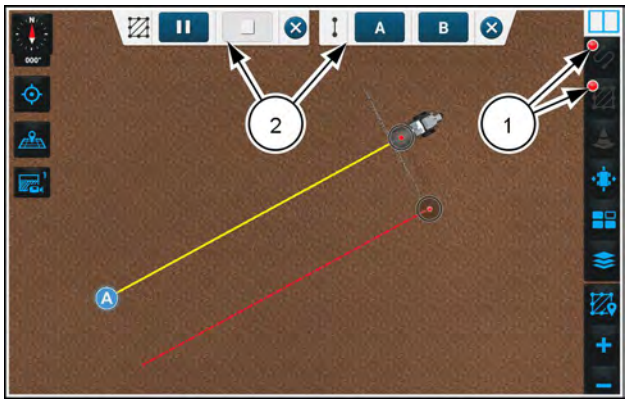
You can record multiple types of map objects simultaneously. This is helpful in situations where you want precise distances between the recordings. For example, gaps in coverage are reduced if you record a boundary and a curved swath simultaneously.

Press the applicable icon in the right-hand menu to start multiple recording of an object. Use the menus to configure the desired object. Repeat this procedure for other desired objects. Refer elsewhere in this manual for instructions on recording specific objects.

The example in this illustration shows multiple recordings of a boundary and a curved swath.

The icons **(1)** in the right-hand menu for each object type have recording indicators on them.

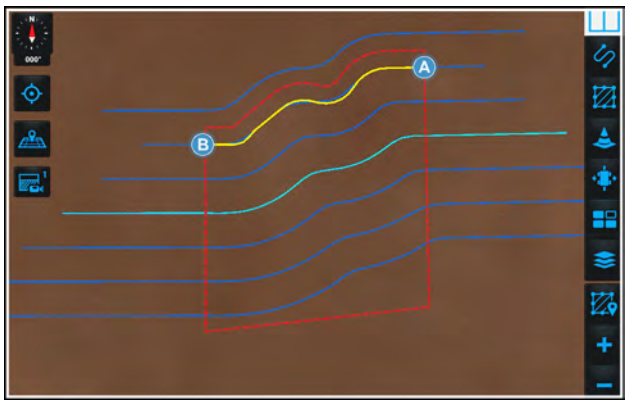
Edit panels **(2)** for each object type appear on the top of the map.



RAPH22PLM1761AA 1

Finish recording the objects according to the instructions elsewhere in this manual. You do not need to finish both recordings simultaneously.

In the example shown, a curved swath was recorded simultaneously with a field boundary. The user recorded points A and B of the curved swath while recording the boundary. Then the user continued the boundary.



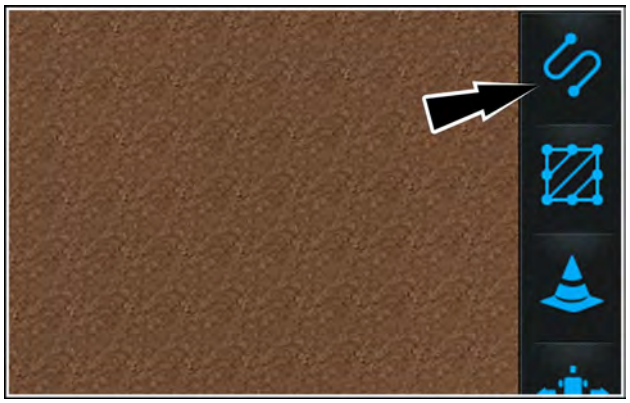
RAPH23PLM0070AA 2

Swath selection and swath management

Swath selection

Many applications use multiple swaths. All swaths you record are organized in a swath management tab in the swath menu. The swath management tab contains the listing of all available swaths in the current field. Each swath listing has controls for activating and for editing the swath.

In the right-hand menu, press the “Swath” icon.

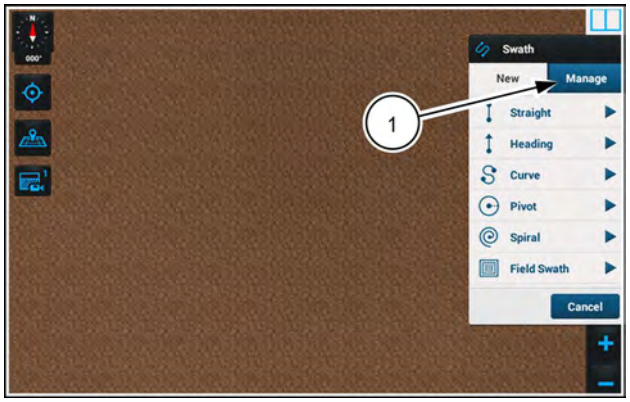


NHIL20PLM0086AA 1

Press the “Manage” tab **(1)**.

NOTE: *You cannot access the swath “Manage” tab when guidance is engaged. When guidance is engaged, the “Manage” tab is disabled and appears gray.*

NOTE: *If the vehicle has dual displays, pressing the “Manage” tab in a display disables the “Swath” icon in the other display.*



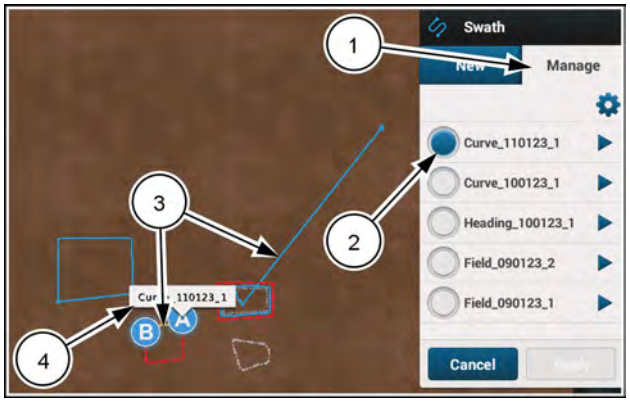
RAPH22PLM1789AA 2

The “Swath” menu appears.

The recorded swaths **(3)** appear in a list **(2)** in the “Manage” tab **(1)**. With the “Manage” tab selected, the selected swath also appears in the map with an annotation giving its name **(4)**.

The list of swaths in the “Manage” tab appear in their order of creation. The map zooms out to include all recorded swaths in the current field. A scroll bar appears if there are too many recorded swaths to fit on the menu.

If there are no recorded swaths for the field, a message appears that says, “No swaths have been recorded yet.”

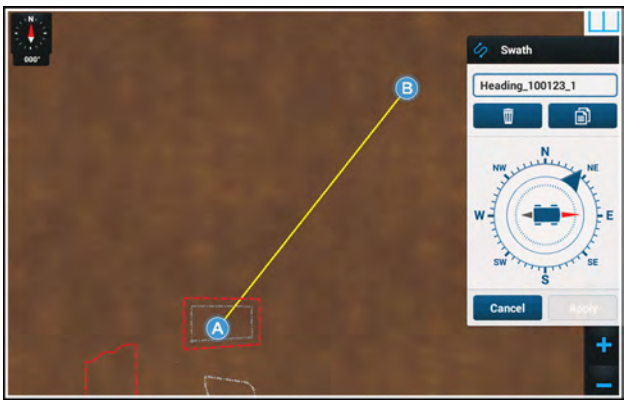


RAPH23PLM0071AA 3

Press the arrow next to the swath you wish to edit to open the edit menu for the swath.

The edit menu appears with the name of your selected swath given in the top row. The current information about the swath appears in the menu.

All swaths in the map except for the selected swath disappear from the map. The selected swath remains in the map. The name annotation for the selected swath appears temporarily. Any other relevant map information about the swath appears in the map.



RAPH23PLM0072AA 4

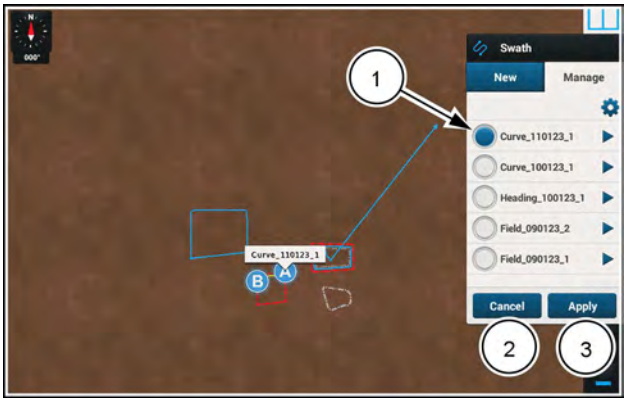
If a swath was activated before opening the “Swath” menu “Manage” tab, the swath appears highlighted in the map. The most recently created swath appears at the top of the list of swaths in the “Manage” tab.

When you select a swath by pressing the radio button **(1)** in the menu it temporarily becomes active on the map.

Press the “Cancel” button **(2)** to close the menu and discard your changes.

Press the “Apply” button **(3)** to accept the new swath selection.

NOTE: *The “Apply” button will remain greyed out if no changes are made.*

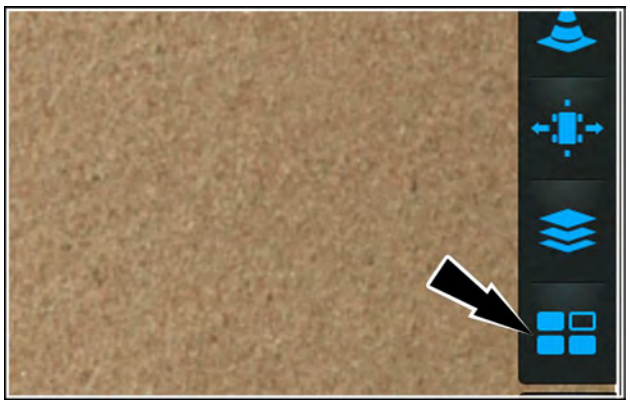


RAPH23PLM0074AA 5

“Swath Adjust” widget

The “Swath Adjust” widget when enabled resides on top of the map. You can use the “Swath Adjust” widget to scroll through the existing swaths without the need to open the “Swath” menu.

On the right-hand menu, press the “Widgets” icon.



NHIL20PLM0049AA 6

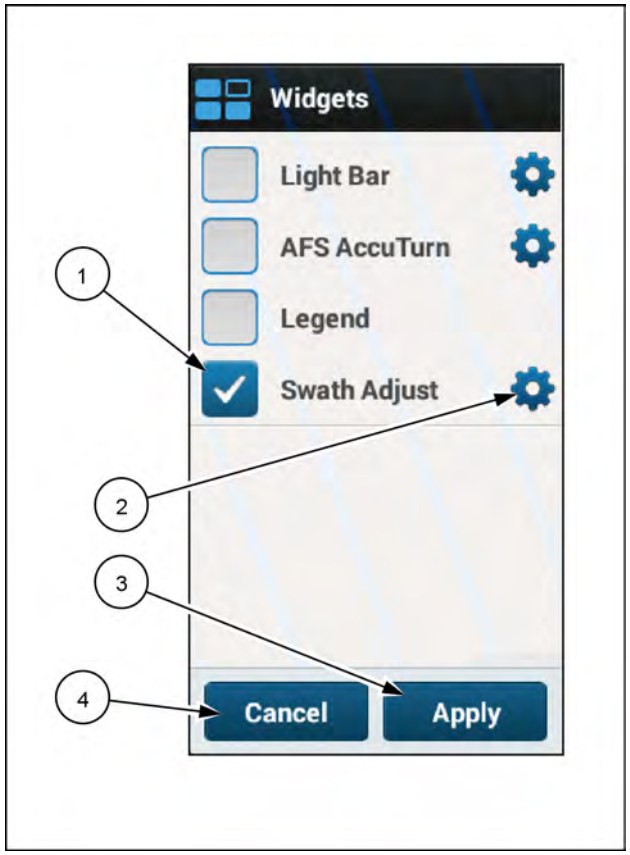
The “Widgets” menu opens.

Press to check the “Swath Adjust” check box **(1)**. The “Adjustments” widget opens.

The gear icon **(2)** opens the “Remark Increment Value” window and does not affect swath selection. See “Remark a swath” (**5-121**) for information about the “Remark Increment Value” window.

Press the “Apply” button **(3)** to accept your changes to the “Widgets” menu.

Click the “Cancel” button **(4)** to close the “Widgets” menu without accepting your changes.



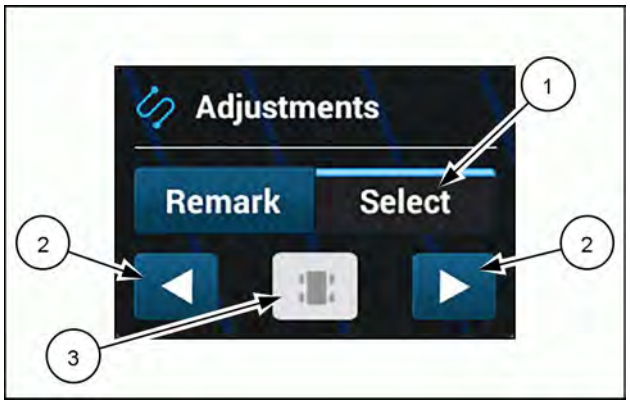
RAPH22PLM0921BA 7

The “Adjustments” widget appears in the map.

If needed, press the “Select” toggle **(1)** to toggle swath selection.

The left and right-arrows **(2)** scroll through the available swaths. As you press the left and right-arrows, you can observe the swath lines change in the map. Scroll through the swaths until the desired swath appears. When the desired swath appears, you can immediately use it.

Press the center button **(3)** to switch to an available swath that is closest to the vehicle, based on position and heading.



RAPH22PLM1680AA 8

Swath adjust with field swath

If you are using a field swath, the “Adjustments” widget can be used to easily switch between square mode and infill mode, eliminating the need to change the pattern manually. For more information on field swath, see: “Field swath” (**5-58**).

Press the “Select” toggle button **(1)**.

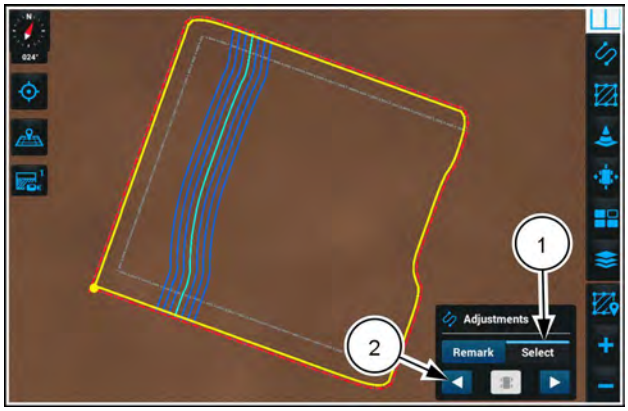
Use the “left arrow” **(2)** button to change to square mode when using infill mode.

Use the “right arrow” **(3)** button to change to infill mode when using square mode.

Press the “left arrow” button **(2)** to change the field swath to square mode.

NOTE: *The “Adjustments” widget can only be used with square mode and infill mode when using a field swath.*

Field swath using infill mode



NHPH23PLM1506AA 9

Field swath using square mode

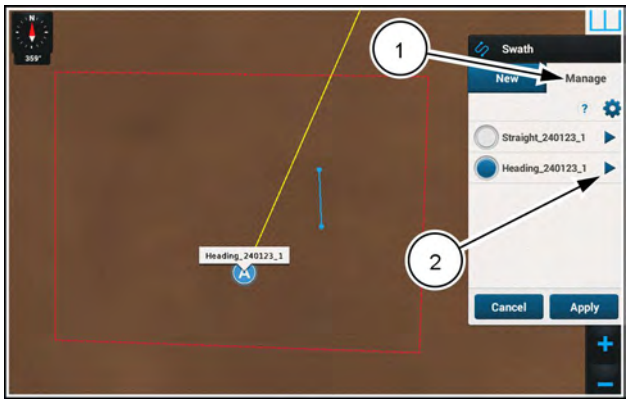
NHPH23PLM1505AA 10

Rename, copy, or delete a swath

The software selects default names for your swaths when you create them. However, you are able to rename, delete, or copy swaths to better suit your operations.

Access the swath “Manage” tab **(1)**. See “Swath selection” (**5-82**).

Press the arrow button **(2)** next to the swath that you wish to edit.



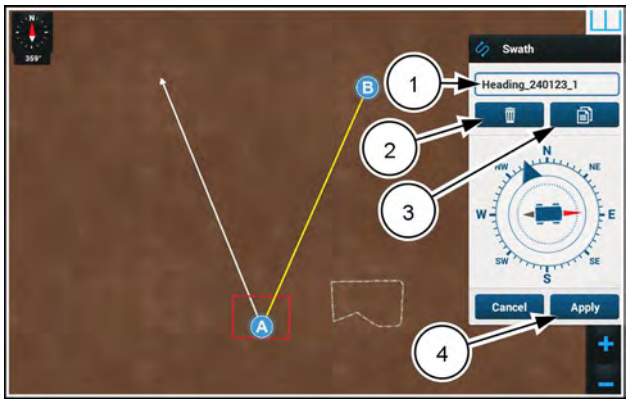
RAPH23PLM0164AA 1

Press the box **(1)** to edit the swath name.

Press the “delete” button **(2)** to delete the swath.

Press the “copy” button **(3)** to create a copy of the swath.

Press the “Apply” button **(4)** to accept the changes.



RAPH23PLM0165AA 2

Edit straight swath

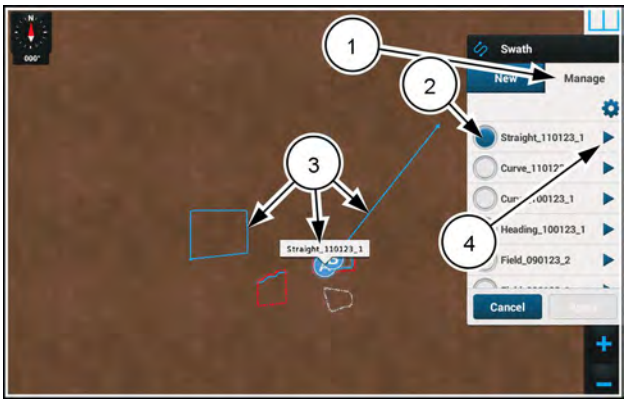
You can edit a straight swath by changing the latitude and longitude coordinates of its endpoints in the edit menu. manually. You can also move a point to the current position of the vehicle, or edit the swath source type.

Access the swath “Manage” tab **(1)**.

The “Swath” menu appears.

The recorded swaths appear in a list **(2)**. The recorded swaths also appear on the map **(3)**.

Press the arrow **(4)** next to the swath you wish to edit to open the edit menu for the swath.

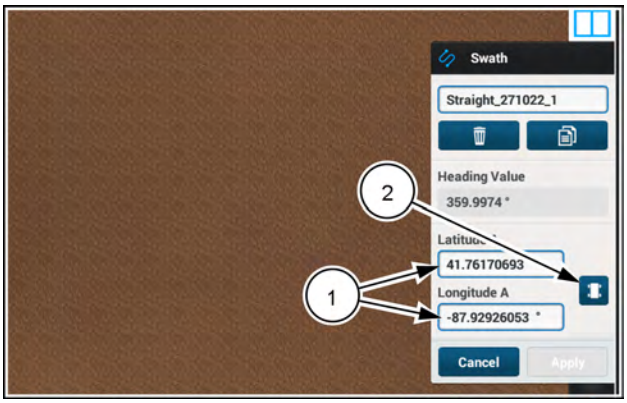


RAPH23PLM0075AA 1

The edit menu appears with the name of your selected swath given in the top row. The current information about the swath appears in the menu.

All swaths in the map except for the selected swath disappear from the map. The selected swath remains in the map. Any other relevant map information about the swath appears in the map.

In the straight swath editing menu, you can change the latitude and longitude coordinates of points A and B by entering them in the applicable spaces **(1)**. After you enter the coordinates of point A, the new point A appears on the map connected with point B. The map zooms to show the updated swath. You can then enter the coordinates of point B. Point B and the line connecting points A and B update in the map.



NHIL22PLM0459BA 2

You can also configure the location of a point to the current location of the vehicle by pressing the “Vehicle” button **(2)**.

If the new swath does not meet system requirements for distance and other parameters, an advisory message temporarily appears.

RAIL18PLM1570AA 3

The swath source type may have been incorrectly defined at the time of swath creation.

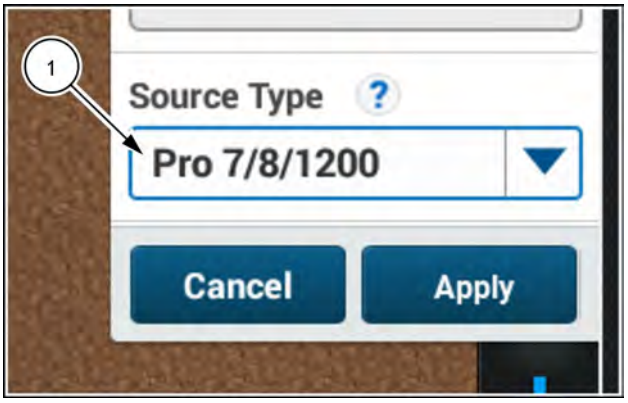
To change the swath source type, swipe up on the swath creation window to access the “Source Type” menu **(1)**.

Press the menu and select the desired swath creation method.

- If you select “Pro 7/8/1200” option, then the system will generate the straight swath using the traditional CASE IH method.
- If you select the “Non-Pro 7/8/1200 1” option, then the system will generate the straight swath as an approximation of a **Trimble®** A-B line.
- If you select the “Non-Pro 7/8/1200 2” option, then the system will generate the straight swath as an approximation of a **John Deere™** A-B line.

Press the “Apply” button to apply your changes and return to the “Swath” menu.

Press the “Cancel” button to discard all of your changes and return to the “Swath” menu.



NHIL20PLM0014AA 4

Edit heading swath

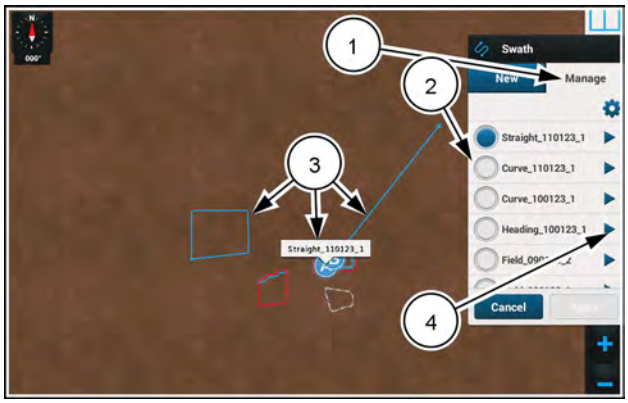
You can edit a heading swath by using the “Heading” menu. The editing functionality is the same as in creating a heading swath, except for the addition of latitude and longitude editing. See “Heading swath” (**5-26**) for information about creating a heading swath.

Access the swath “Manage” tab **(1)**. See “Swath selection” (**5-82**) for more information.

The “Swath” menu appears.

The recorded swaths appear in a list **(2)**. The recorded swaths also appear on the map **(3)**.

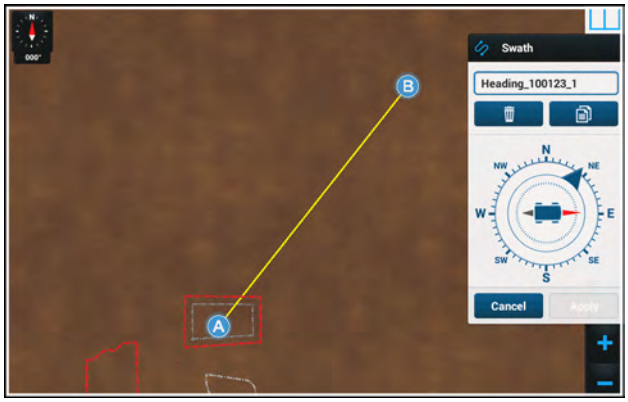
Press the arrow **(4)** next to the swath you wish to edit to open the edit menu for the swath.



RAPH23PLM0075AA 1

The edit menu appears with the name of your selected swath given in the top row. The current information about the swath appears in the menu.

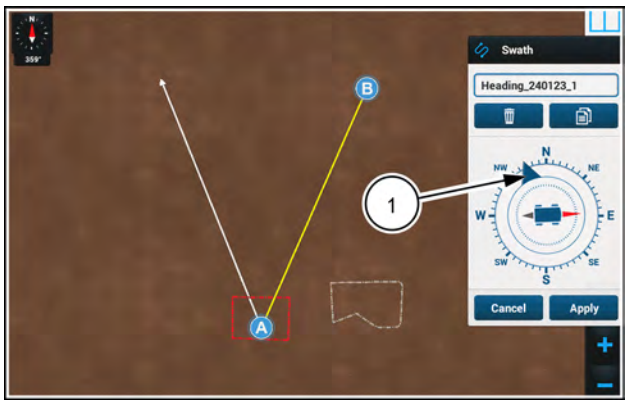
All swaths in the map except for the selected swath disappear from the map. The selected swath remains in the map with its name annotation. Any other relevant map information about the swath appears in the map. Recorded fields in the area of swath remain visible in the map.



RAPH23PLM0072AA 2

Move the needle **(1)** within the interactive compass or press the location on the compass to adjust the heading of the swath. You can drag the blue outside needle to move it around the compass to choose a new heading. You can also press around the compass. The blue needle jumps to the position of the press.

Alternatively, swipe up to access the heading and position fields. Both the heading input field and the compass automatically update with the user input, no matter which of the two heading selection methods you use.

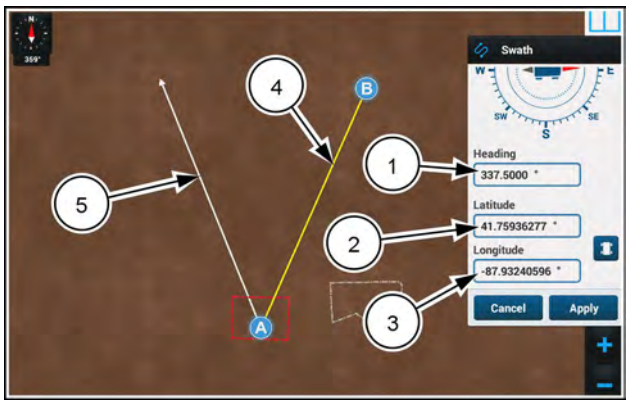


RAPH23PLM0165AA 3

Enter the heading within the “Heading” field **(1)**. You can enter the heading with an accuracy up to four decimal places.

Change the latitude **(2)** and longitude **(3)** coordinates of the starting point of the heading swath.

As soon as you open the heading swath panel, the existing heading **(4)** appears on the map. When you enter a new heading, either from the compass or the input field, a white line **(5)** appears to indicate the new heading.

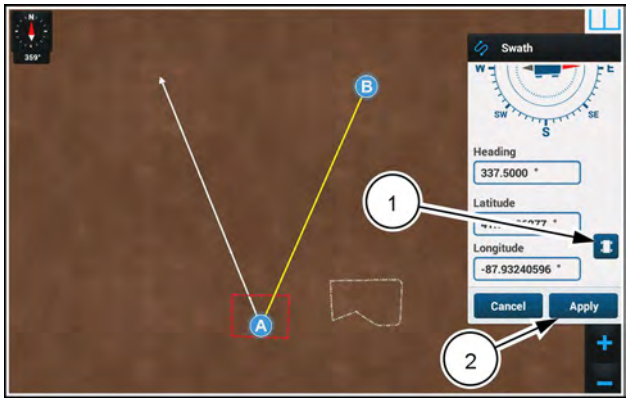


RAPH23PLM0166AA 4

You can also configure the location of the starting point to the current location of the vehicle by pressing the “Vehicle” button **(1)**.

Press the “Apply” button **(2)** to apply your changes and return to the heading swath editing menu.

Press the “Cancel” button to discard all of your changes and return to the “Swath” menu “Manage” tab.



RAPH23PLM0166AA 5

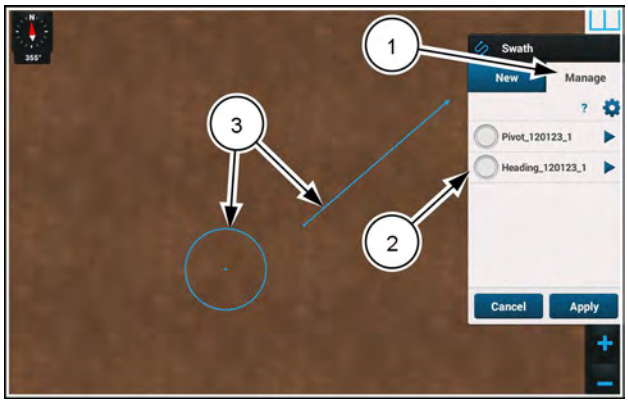
Edit pivot swath

You can change the latitude and longitude coordinates of the center point of a pivot swath. You can also change the radius of a pivot swath. In the pivot swath editing menu, the coordinates and radius of a selected swath are pre-filled when you open the menu.

Access the swath “Manage” tab **(1)**. See “Swath selection” (**5-82**) for more information.

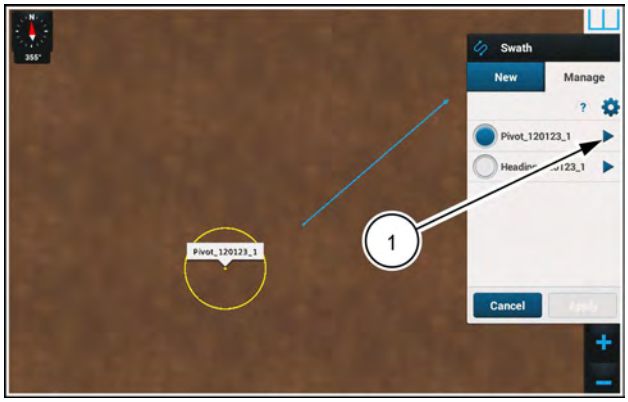
The “Swath” menu appears.

The recorded swaths appear in a list **(2)**. The recorded swaths also appear on the map **(3)**.



RAPH23PLM0076AA 1

Press the arrow **(1)** next to the swath you wish to edit to open the edit menu for the swath.



RAPH23PLM0077AA 2

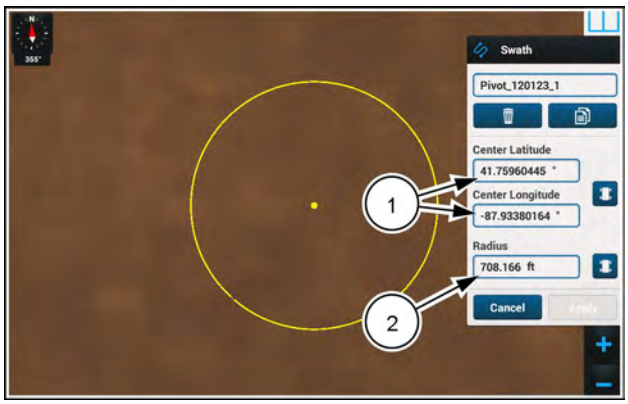
The edit menu appears with the name of your selected swath given in the top row. The current information about the swath appears in the menu.

All swaths in the map except for the selected swath disappear from the map. The selected swath remains in the map with its name annotation appearing temporarily. Any other relevant map information about the swath appears in the map.

Using their respective input fields **(1)**, enter the desired latitude and longitude coordinates of the center point of the new pivot swath. The new point appears on the map. The map zooms out to show the new center point, and the current vehicle position.

Enter the desired radius of the new swath into the radius space **(2)**.

You can also use the “Vehicle” button to establish the new center point or a new radius.

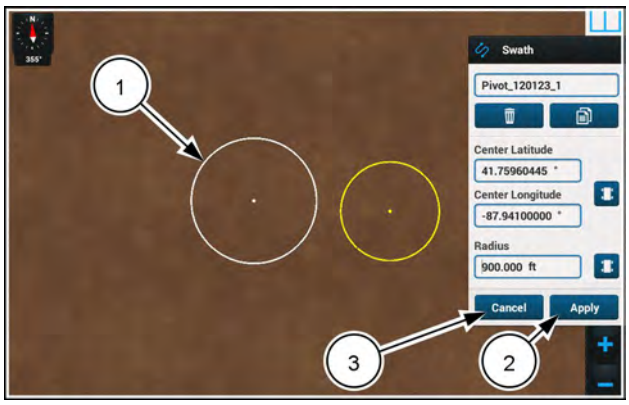


RAPH23PLM0078AA 3

A white pivot swath **(1)** appears on the map in the desired location and with the desired radius.

Press the “Apply” button **(2)** to apply your changes and return to the swath management menu.

Press the “Cancel” button **(3)** to discard all of your changes and return to the “Swath” menu.

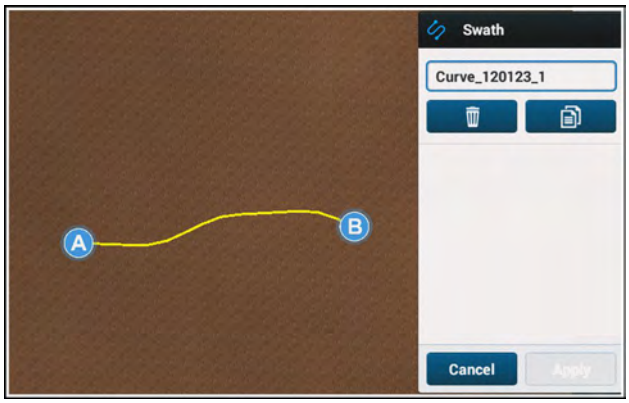


RAPH23PLM0079AA 4

Edit curve swath

There is no provision for editing curved swaths. You can only rename, copy, or delete the curved swath.

- See “Rename, copy, or delete a swath” (**5-86**).



RAPH23PLM0080AA 1

Swath manager operations on multiple displays

When you record or adjust a swath on one display, a recording indicator appears:

- On the applicable icon in the right-hand menu in the other display
- In the edit panel on the top of the map
- On the vehicle in the map

When in the “Manage” tab, the changes you make are only visible from other displays once you apply the changes.

Swath minimum turning radius

The autoguidance system uses the “Minimum Turning Radius” configuration to generate curved swaths. The value is not linked to a particular swath pattern, field, or vehicle, but is used uniformly across swaths, fields, implements, and vehicles until the operator changes the value. The value is linked to the active guidance configuration.

The system uses this value to adjust tight turns in any curved swath pattern. Whenever the value in the “Minimum Turning Radius” window is changed, the radius of curvature through tight turns also changes, thereby changing the path of the implement through tight turns. Changing the radius of curvature with this window always changes the tight turns in the swath pattern, whether the radius is increased or decreased.

Perform the procedure below to configure the minimum turn radius for all swaths types.

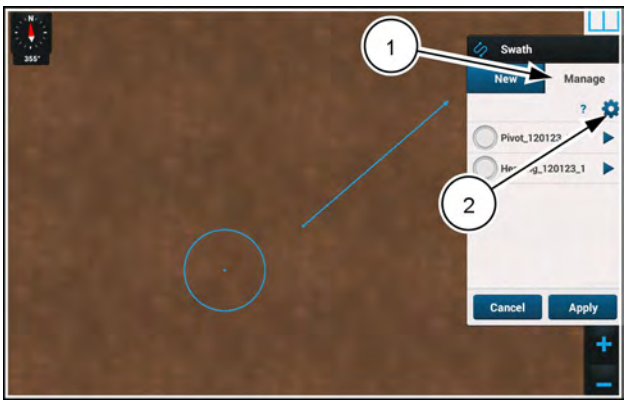
In the right-hand menu, press the “Swath” icon.

NHIL20PLM0086AA 1

Press the “Manage” tab **(1)**. The “Swath” menu appears.

NOTE: *You cannot access the swath “Manage” tab when autoguidance is engaged. When autoguidance is engaged, the “Manage” tab is disabled and appears gray.*

Press the “gear” button **(2)**. The “Swath Settings” window appears.



RAPH23PLM0076AA 2

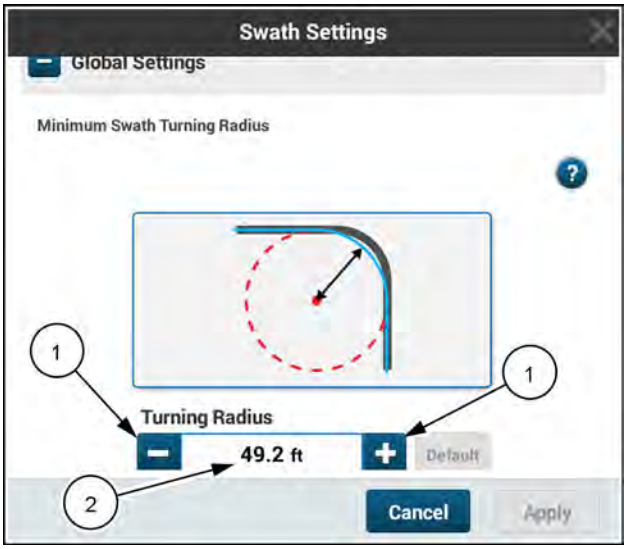
Adjust the minimum turn radius under the “Global Settings” menu.

Press the “Minus” or “Plus” buttons **(1)** to change the minimum turning radius. Alternatively, you can press and hold the value field **(2)** to bring up a keypad. Use the keypad to enter the desired radius.

Press the “Default” button to configure the minimum turn radius to a calculated default for the swath width.

Press the “Apply” button to apply your changes and return to the straight swath editing menu.

Press the “Cancel” button to discard all of your changes and return to the “Swath” menu “Manage” tab.

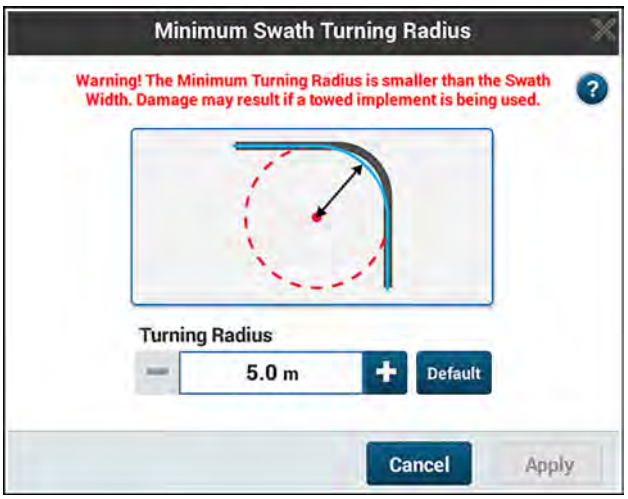


NHIL20PLM0132AA 3

If you attempt to configure a minimum swath turning radius that is smaller than the swath width, a warning message appears. The applicable controls appear disabled.

The warning message reads: “Warning! The Minimum Turning Radius is smaller than the Swath Width. Damage may result if a towed implement is being used.”

Adjust the minimum turn radius until the warning message disappears and all of the controls appear enabled.



RAIL18PLM1215BA 4

Autoguidance engagement

Conditions for engagement

The following conditions must be present for automatic mode to engage:

- Guidance is activated. See “Unlocks and activations” (**3-58**).
- The required GNSS reception is available. See “Satellite availability” (**5-97**).
- The system is performing properly without critical system faults. See “Proper system performance” (**5-98**).
- Vehicle speed is within the engagement range for the vehicle type. See “Vehicle speed” (**5-98**).
- An operator is present in the operator’s seat. See “Operator presence” (**5-99**).
- A calibrated vehicle and applicator are selected. See “Vehicle calibration and applicator setup” (**5-99**).
- The operator has reviewed and accepted the safety information. See “Safety information” (**5-100**).
- A grower, farm, and field are selected. See ”Operations” screen (**3-61**).
- A swath is selected. See “Swath selection” (**5-102**).
- The autoguidance disable switch, if equipped, is not in the disabled position. See “Autoguidance disable switch” (**5-102**).

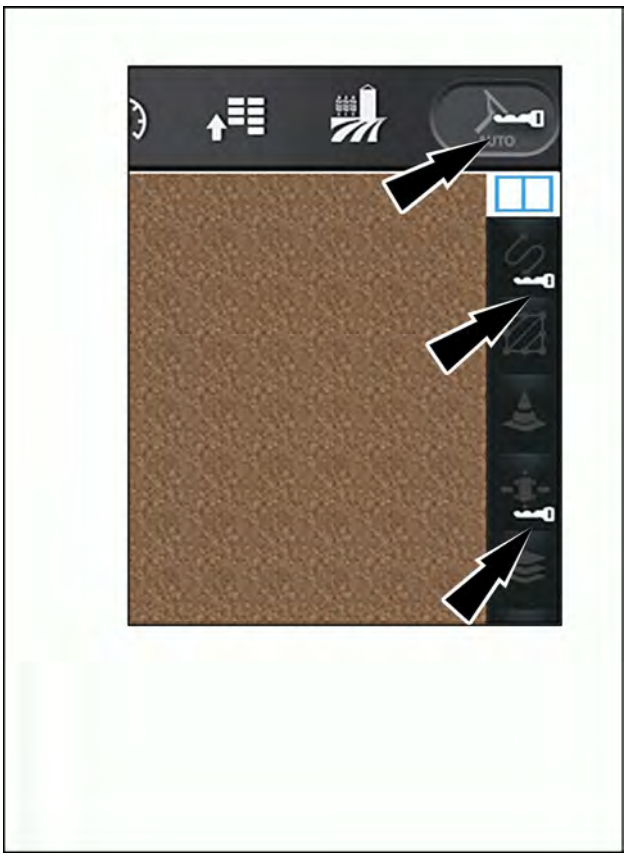
This chapter explains the meaning of each condition.

Guidance is activated

You must activate the autoguidance feature to use it. See your CASE IH dealer to unlock autoguidance and other features that require activations.

See “Unlocks and activations” (**3-58**) for more information.

If you attempt to use autoguidance without an activation, activation required icons appear in various locations in the display.



RAPH23PLM1187BA 1

Satellite availability

Engagement of automatic operation with Real-Time Kinematic (RTK) corrections requires five or more satellites in view. Four or more satellites are required to maintain engaged automatic operation.

Engagement of automatic operation for Satellite-Based Augmentation system (SBAS) or Precise Point Positioning (PPP) depend on the number of satellites in view as well as the accuracy of GNSS system for determining position. A minimum of four satellites are required to establish a three-dimensional position, and more satellites are better than fewer. Thereafter, GNSS accuracy – HDOP, PDOP, C/No – determines the usability of the satellites to engage automatic operation.

- The Horizontal Dilution of Precision (HDOP) is a common GNSS metric that represents GPS signal quality at the vehicle location. HDOP refers to the quality of the horizontal position based on the current satellite availability. Any value that is less than 2 will generally offer good working results.
- The Positive Dilution of Precision (PDOP) is a common GNSS metric that reflects the GPS signal quality at the vehicle location. PDOP offers the best overview since it reflects the geometry of the satellites above the vehicle. A low PDOP means that the positioning of satellites is good and that good positional accuracy can be expected. In general, any value below 2 will offer good working results.
- The Carrier-to-Noise Ratio (C/No) is a measure of signal strength of the satellite that is providing the correction data (for example, WAAS/EGNOS or AFS corrections). A higher C/No number provides better accuracy.

When the display is powered ON and the system components are initialized, the system starts tracking satellites immediately. The GNSS corrections technology that is in use determines how long it takes to acquire the required satellites. This may take a few minutes or much longer.

If you attempt to engage autoguidance without the required GNSS quality level, the system displays a message and does not engage automatic mode.

If the required GNSS quality level is lost while autoguidance is engaged, the system displays a “Take Control” message appears. The system enforces manual steering. The display beeps intermittently until the operator acknowledges the message. Press the “OK” button to dismiss the message. Manual steering is required.

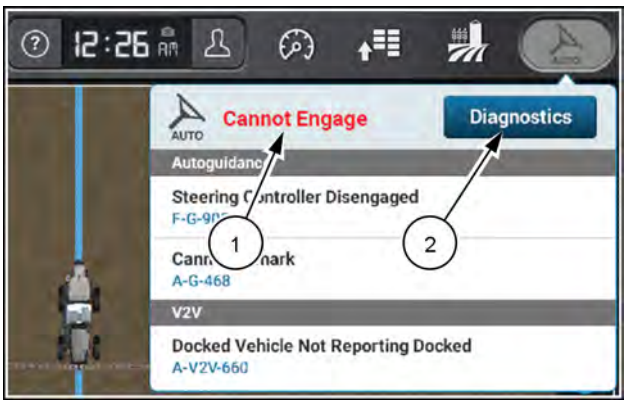
RAIL18PLM0202AA 1

Proper system performance

The autoguidance application prevents the system from engaging if a critical problem is detected. If critical system faults are active, the system displays a “Cannot Engage” message **(1)** and sounds an audible alarm.

You can press anywhere outside of the message area to close the message window.

Press the “Diagnostics” button **(2)** on the “Cannot Engage” pop-up window to see diagnostic information about the fault or condition preventing autoguidance engagement.



RAPH23PLM0392AA 1

Perform any instructions given in the diagnostic information. If the condition persists, contact your CASE IH dealer.

When the reason that the system could not engage is no longer active, the function title no longer appears.

If all of the reasons that the system could not engage are removed, the message disappears.

Vehicle speed

When the other conditions for automatic operation are present, pressing the “Guidance Engage” button on the multi-function handle engages autoguidance if the vehicle GNSS speed is within the engagement range for the vehicle type.

NOTE: *GNSS speed is defined here as the true ground speed of the vehicle as opposed to the speed that is reported on a digital or analog speedometer. The “Autoguidance” application determines ground speed more accurately than other devices.*

The speed ranges for engagement and operation vary by vehicle.

Automatic operation can be engaged while the vehicle is at a complete stop. The vehicle can also be slowed to a complete stop without disengaging.

Once automatic operation is engaged, the operator can increase vehicle speed to the upper limit of the operating range for the vehicle. The system does not operate at GNSS speeds that exceed operating range indicated for any vehicle.

If an operator attempts to engage automatic operation while GNSS speed is outside of the engagement range for the vehicle, the system displays a “Cannot Engage” message and does not engage automatic mode.

If the operating speed for the vehicle is exceeded during automatic operation, the system displays a “Take Control” message and enforces manual steering. The display sounds an audible alarm until the message is acknowledged.

Press the “OK” button to dismiss the message. The system enters manual steering mode.

The table below gives the engagement ranges based upon vehicle model. Note that heading affects the maximum engagement speed. You can engage the autoguidance while stopped. The actual system engagement occurs when the vehicle starts moving.

Vehicle	Engagement range	Operating range	Reverse operation
Patriot® 50 Series sprayers	**0.0 – 24.1 km/h** (**0.0 – 15.0 mph**)	**0.0 – 38.6 km/h** (**0.0 – 24.0 mph**)	Yes

Operator presence

An operator must be on board the vehicle for autoguidance to engage. All vehicles with autoguidance perform an operator presence check.

The operator must be seated for automatic mode to engage. The operator must remain seated to retain automatic operation.

If the operator leaves the seat for **2 s**, the system displays the “Sit Down” icon in the status and warning icon area. A message in the “Guidance Engage” window instructs the operator to sit down.

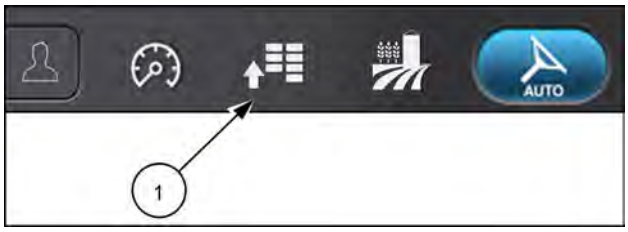
If the operator leaves the seat for **8 s** the system displays a “Take Control” message appears and enforces manual mode. The display beeps intermittently until the message is acknowledged.

Vehicle calibration and applicator setup

The autoguidance system must be calibrated before automatic mode can engage. Calibration is specific to each vehicle and cannot be shared from vehicle to vehicle. See “Guidance calibrations” (**4-54**).

An applicator must be selected and set up before automatic mode can engage. Setup information particularly must include the swath width for the applicator.

To access the applicator setup information, press the button **(1)** on the top bar to open the “Menu” screen. Press the “Settings” tab, if necessary.



RAIL19PLM0121AA 1

Press the appropriate button to access the “Applicator” setup card.

See “Applicator card” (**4-63**) for more information about setting up applicators.

RAPH21PLM1074AA 2

Safety information

The first time you press an autoguidance engagement button after vehicle startup, the system prompts you to accept the system engagement liability message. You must accept the message for autoguidance to engage.

The following actions that cause first engagement also trigger the system liability message:

- Remote engage button
- End of row sequence
- Other methods of engaging autoguidance

If another operator logs in to the display, that operator must accept the system liability message also.

Only a Basic or Admin user can see the safety information. A non-user or Guest user does not see the message and cannot engage the autoguidance.

The safety message only appears if autoguidance is purchased and enabled.

The following text appears:

“An operator trained and qualified to use this vehicle's autoguidance system must be fully seated in the operator's seat at all times while the vehicle engine is running, including when the system is in AUTO mode.

“This vehicle's autoguidance system cannot identify or avoid obstacles in the path of the vehicle. The operator is responsible for maintaining full control of the vehicle and avoiding all obstacles.

“By pressing ACCEPT, You acknowledge and certify that You have read the vehicle’s manual, and understand how the vehicle and the autoguidance system work, and that You assume full responsibility for its safe operation. Failure to follow these instructions may result in serious injury or death."

Press the “Accept” button **(1)** to accept the system liability message and enable guidance

Press the “Cancel” button **(2)** to close the system liability message and cancel.

RAPH21PLM1533BA 1

Precision farming selections

A swath pattern is recorded for one field on one farm that is owned or worked by one grower. A swath cannot be created or selected unless a field exists. A field requires a farm, and a farm requires a grower.

Before operating with autoguidance, make sure that you have your grower, farm, field selections populated, and your implement / guidance configurations selected.

NOTE: *See "'Operations' screen" (**3-61**)*

RAPH23PLM0082AA 1

Swath selection

You can select a swath using the “Swath” menu in a map User-Defined Window (UDW), or by selecting the swath on the map once the “Swath” menu is opened. The swath pattern must generate successfully to engage automatic mode.

NOTE: *You cannot select a swath while guidance is engaged. If you wish to select a swath other than the one you are currently engaged on, disengage the guidance system.*

For more information, see “Swath selection” (**5-82**) in the “FIELD MAPPING” chapter.

Autoguidance disable switch

Some vehicles are equipped with autoguidance disable switches. When autoguidance is disabled with the switch, the system cannot enter automatic mode.

NOTICE: *For safe road operation, use the autoguidance disable switch to disable autoguidance before roading.*

Autoguidance must be enabled with the switch before autoguidance will engage.

If autoguidance is disabled with the switch while autoguidance is engaged, the system immediately exits automatic mode and displays a “Take Control” message.

Press the “OK” button to dismiss the message.

RAIL19PLM0131AA 1

Autoguidance operation

Introduction: Autoguidance driving

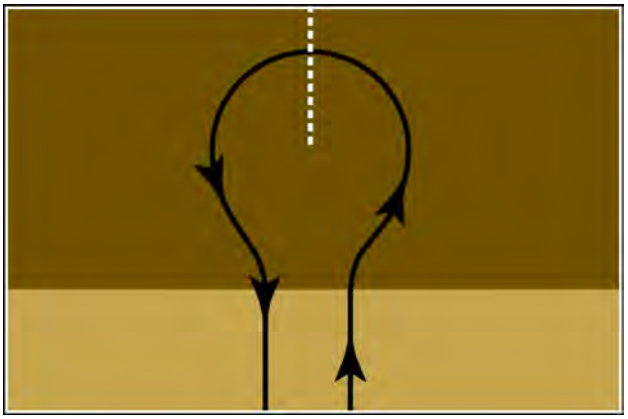
This chapter explains:

- How to align the vehicle to the selected swath
- How to engage autoguidance
- The end of row behavior of the “Autoguidance” application
- The swath skipping feature
- The tramlines feature
- Adjusting on-line steering aggressiveness
- How to keep the vehicle aligned to the swath with the “Nudge” window
- How to shift a curve or straight swath pattern with the “Remark” window

Align the vehicle to the swath

Moving to a new swath

When turning at the end of a row, the autoguidance software knows that there is a possible pass to the left or to the right of the pass that was just completed. When you engage the autoguidance system, the system steers toward the closest swath line. For the best result, only engage autoguidance after the vehicle is beyond the midpoint of the turn.



RCPH09DSP178BBG 1

Point the vehicle in the desired direction of travel along the next pass before you press the "Engage" button. The system uses vehicle orientation for its initial direction of travel when you engage autoguidance.

When the vehicle is close enough to a guidance line to engage the autoguidance system, the guidance line becomes highlighted.

If you press the "Engage" button with the vehicle not clearly pointed at any swath or at a great distance from the swath pattern, a "Take Control" message displays and autoguidance does not engage.

RAIL18PLM0282AA 2

If you cannot engage the autoguidance system, the “Cannot Engage” fault list appears.

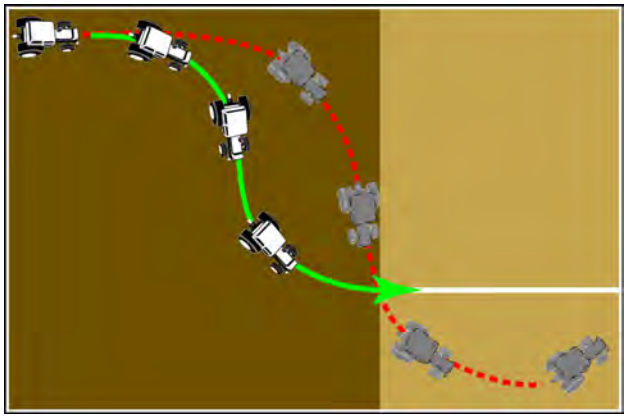
When this occurs, perform one of the actions below before attempting to engage autoguidance again.

- Drive the vehicle closer to the swath pattern.
- Point the vehicle at the desired swath.
- Follow the resolution that appears on the alarm popup. You can also refer to the guidance diagnostics in the “GNSS & Guidance Diagnostics” tab on the main menu screen.

Start a new swath

How well a vehicle converges on a new swath depends on:

- Vehicle alignment with the desired direction of travel
- The amount of cross track error
- Vehicle speed during the turn
- Vehicle setup (calibration)
- Aggressiveness
- Steering mechanics: front steer, rear steer, or articulation steer



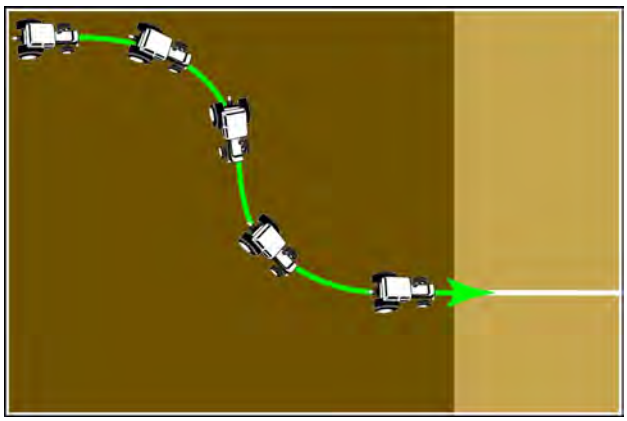
RCPH09DSP180BBG 3

Once vehicle steering is properly calibrated – as aggressive as it can be without causing vibration or chatter – calibration is no longer a factor. Reducing speed during the turn may help in some situations, but there is a point at which further speed reduction produces no result.

To further reduce convergence time, keep cross track error to a minimum and carefully align the vehicle to the desired direction of travel before engaging autoguidance.

If the vehicle continues to overshoot the intended swath, increase headland depth to permit a longer turn.

Manually drive and align to the swath. Engage in reverse to align to the swath.



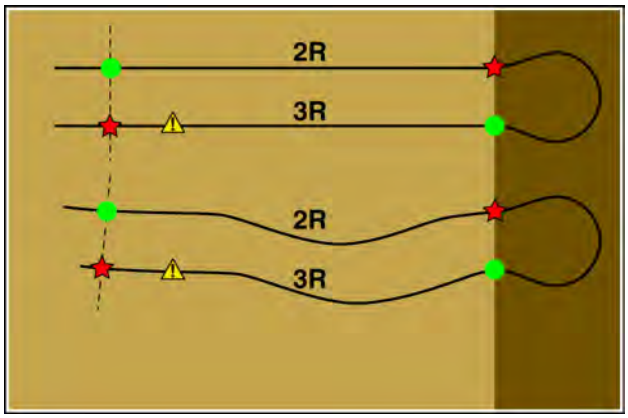
RCPH09DSP181BBG 4

End of swath and field boundary behavior

The autoguidance application uses icons in the status and warning icon area and an audible alarm to warn an operator when the end of a swath or an outer field boundary is approaching during automatic operation. The warning never forces the system to enter manual mode, but only warns the operator. The operator is always responsible for the control of the vehicle.

The warning behavior is the same when you approach the end of a swath or approach an outer field boundary. However the end-of-swath behavior is suppressed when the vehicle is operating within an outer field boundary. Both warnings never occur in the same field. If an outer field boundary is present for the field, only the approaching field boundary warning occurs. If an outer field boundary is not present for the field, only the approaching end-of-swath warning occurs.

For the end-of-swath warning, the system assumes that the next swath to be engaged will be in the opposite direction of the current swath. If the operator engages on another swath in the same direction as the current swath, no warning occurs.

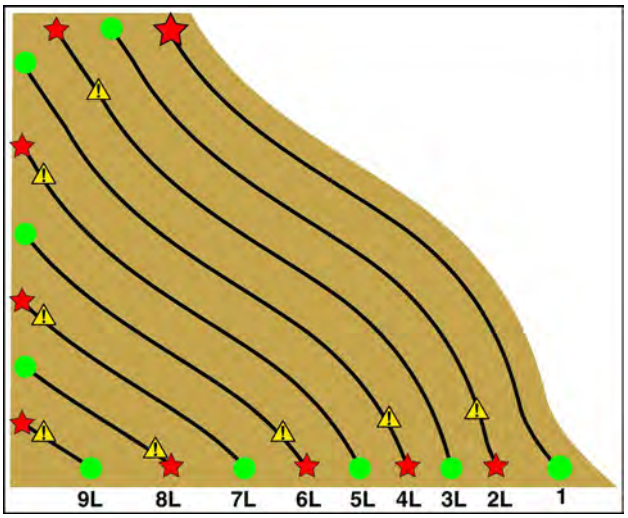


RCPH09DSP189BBG 1

Green circle – point of engagement
Red star – point of disengagement
Yellow triangle – warning

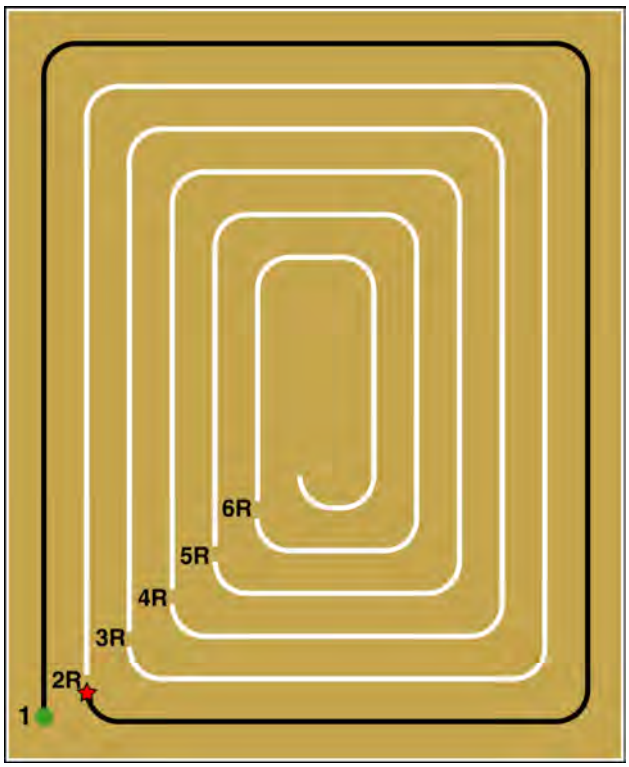
If the lengths of the swaths decrease for the swath pattern, the warning location will also shift since the points of engagement and disengagement are also closer together.

If the lengths of the swaths increase for the swath pattern, the warning location will also shift since the points of engagement and disengagement are farther apart.



RCPH09DSP190BBG 2

When the swath is a spiral, the next swath is in the same direction as the current swath, and there is no trigger point for an end of row warning. This can also be true for a circle swath pattern when driven without end of row turns. An operator can disengage autoguidance toward the end of the current swath, steer to the next swath, and engage autoguidance again without any warning from the display.



RCPH09DSP052BBG 3

The system does not display a warning until the vehicle is beyond the end point of the current swath. Then the same warning behavior occurs as does with a straight swath or a curved swath.

Take control of the vehicle and press the “OK” button to acknowledge the warning. Maneuver the vehicle as necessary to steer to the next swath and engage autoguidance.

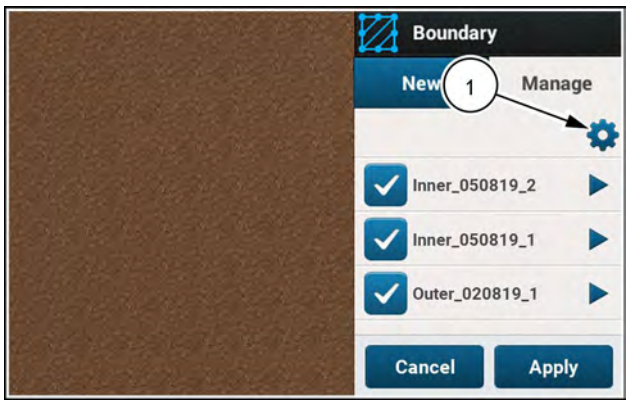
NHPH24PLM0184AA 4

When you cross the configured warning threshold as you approach a boundary, a message appears stating, “Boundary Warning. Reached end of the field.”

A warning icon appears in the status and notification area.

RAPH21PLM1131AA 5

How soon the warning occurs is selectable in the “Boundary Global Settings” window. Use the boundary menu to configure the warning. Press the global settings button **(1)** to access the “Global Settings” screen. For procedural information concerning accessing and modifying the boundary global settings, see the “Global settings” section in “Boundary management” (**5-5**).



NHIL20PLM0096AA 6

Swath acquisition

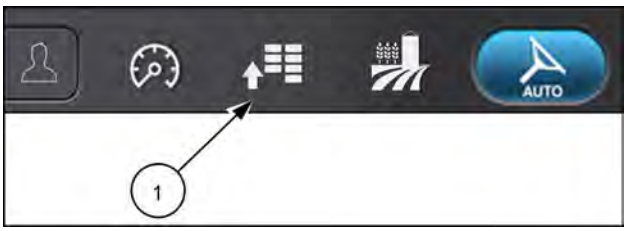
Swath acquisition controls how sharply the sprayer turns during automatic operation to drive the sprayer to the swath. The swath acquisition setting allows the operator to adjust system performance for headland depth, sprayer profile, and personal preference.

- A higher value results in the system using sharper turns to engage on the swath.
- A lower value results in the system using more gradual turns to engage on the swath.

If the setting is too high, the sprayer may become unstable when turning, particularly at higher speeds. If the setting is too low, the sprayer may require a long distance to engage on the swath.

You can save the swath acquisition settings in a guidance configuration.

Press the button **(1)** on the top bar to open the “Menu” screen. Press the “Settings” tab, if necessary.



RAIL19PLM0121AA 1

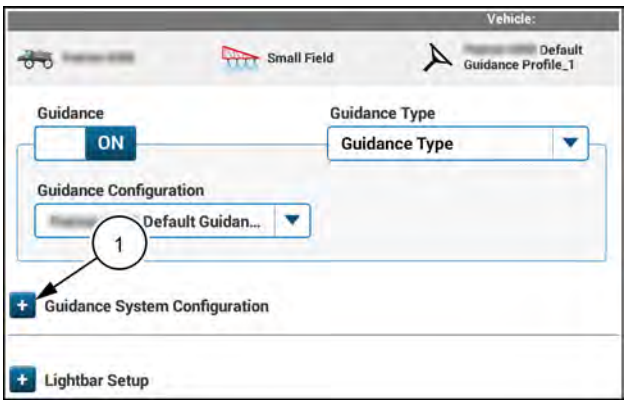
Press the appropriate button to access the “GNSS & Guidance” setup card.

NHPH22PLM0543AA 2

Press the “Guidance” tab to open the “Guidance” screen.

Scroll down as necessary to see the swath acquisition controls.

Press the expand button **(1)** as needed to open the “Guidance System Configuration” section.



RAPH21PLM1309AA 3

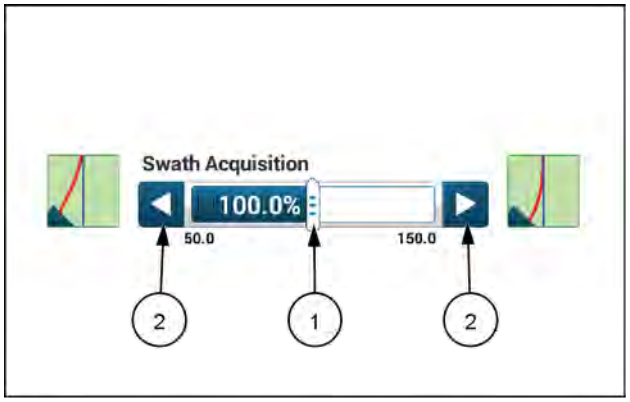
In swath acquisition the sprayer takes a path that converges onto a swath line without overshooting it. This minimizes acquisition cross track error.

The setting in swath acquisition controls how rapidly the vehicle converges on a swath line.

- A higher value results in the system allowing a higher steering slew rate (change rate or radius of curvature command) and hence sharper turns to engage on the swath. A higher value increases the maximum angle that the sprayer can take when acquiring the line. If the setting is too high, the sprayer may become uncomfortable or jerky when turning, particularly at higher acquisition speeds.
- A lower value results in the system using more gradual turns to engage on the swath. A lower value decreases the maximum angle that the sprayer can take when acquiring the line. If the setting is too low, the sprayer may require a long distance to engage on the swath.

Move the slider **(1)** or press the arrows **(2)** to adjust the swath acquisition aggressiveness. The aggressiveness increases as you increase the percentage.

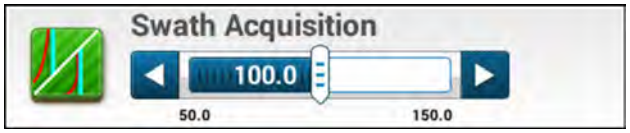
The acceptable range is from **50 – 150%**. **100%** is the default value.



RAPH22PLM1768AA 4

The control for swath acquisition is also available in a User-Defined Window (UDW).

You can place the UDW in the same run page as your other autoguidance UDW's.



RAIL18PLM0283AA 5

Adjust on-line steering aggressiveness

The aggressiveness setting controls how quickly the vehicle steers during automatic operation to keep the vehicle on-line when driving a swath or engaging on a swath. Similar to vehicle calibration, but with less range, the aggressiveness setting allows the operator to adjust system performance for changing soil conditions or vehicle equipment:

RAIL18PLM0284AA 1

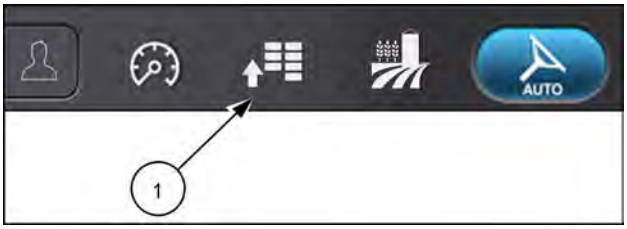
- A more aggressive (higher) setting results in a quicker, potentially jerkier response.
- A less aggressive (lower) setting results in a slower, smoother response.

If the setting is too high, the wheels chatter with sudden, rapid movements. If the setting is too low, the vehicle curves about the desired swath without quite aligning with the swath.

The goal is a prompt steering response that keeps the vehicle on-line without jumpy behavior. Some experimentation may be required to find the right setting for your vehicle. Changes in soil conditions, vehicle equipment and/or vehicle speed may also require a change to this setting to maintain optimal performance.

Adjust steering aggressiveness

Press the button **(1)** on the top bar to open the “Menu” screen. Press the “Settings” tab, if necessary.

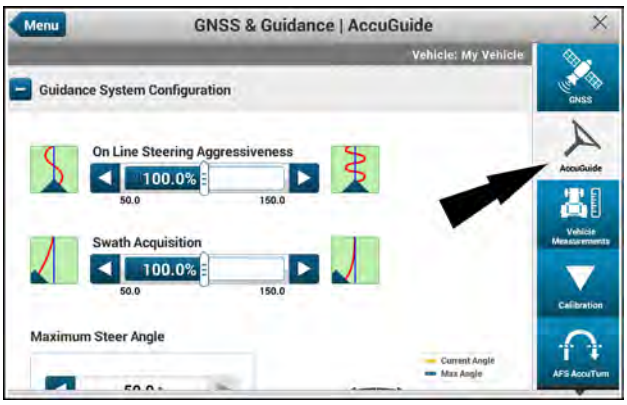


RAIL19PLM0121AA 2

Press the appropriate button to access the “GNSS & Guidance” setup card.

NHPH22PLM0543AA 3

Press the “Guidance” icon to open the “Guidance” screen.

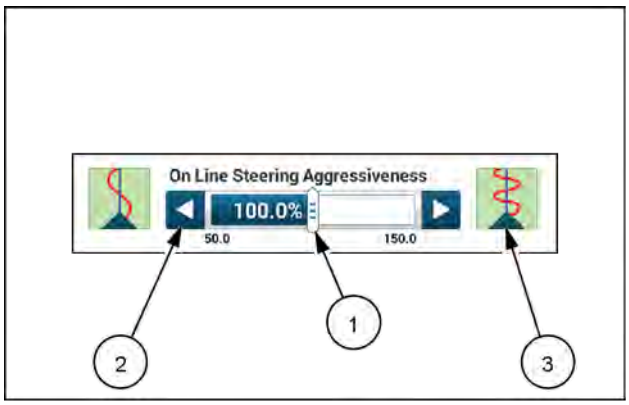


RAPH21PLM1165AA 4

Move the slider **(1)** or press the arrows **(2)** to adjust the steering aggressiveness.

The usable range is from **50 – 150%**. **100%** is the default value.

NOTE: *Review the guidelines below before exceeding* ***139%*** *steering aggressiveness.*



RAPH21PLM1166AA 5

The control for on-line steering aggressiveness is also available in a User-Defined Window (UDW).

You can place the UDW in the same run screen as your other autoguidance UDW's.

RAIL18PLM0284AA 6

Guidelines for setting steering aggressiveness

You may need to adjust steering aggressiveness because of high cross track error or because of too-slow or too-fast reactiveness:

- High cross track error – Increase the steering aggressiveness from **100%** in **5%** increments until you achieve acceptable performance. Do not go above **139%**.

  NOTE: *Adjusting steering aggressiveness to* ***140%*** *or higher enables a guidance software algorithm designed specifically for applications in which high steering wheel slip occurs. Steering wheel slip occurs when the steering wheels steer left or right but the vehicle fails to drive to that direction. This behavior is typically caused by certain soil conditions, by heavy front implements, by narrow row crop types, or by working in deep crop beds.*

- Incorrect reactiveness – To increase the steering reactiveness, increase the steering aggressiveness from **100%** in increments of **5%** until you achieve acceptable performance. To decrease the steering reactiveness, decrease the steering aggressiveness from **100%** in **10%** increments.

The table below gives common situations that can cause reduced steering performance.

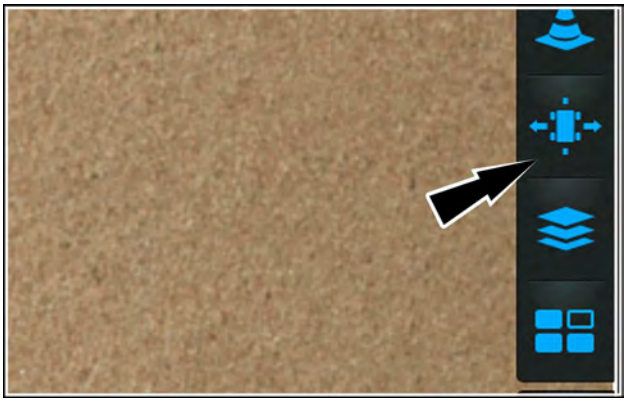
Condition	Description
Default setting	Use the default setting of **100%** unless you need an adjustment.
Reactiveness	Adjust the steering aggressiveness according to the instructions above for incorrect reactiveness.
Weaving	The vehicle is weaving and causing cross track error that is too high, or causing steering to react too slowly. Adjust the steering aggressiveness according to the instructions above for high cross track error.
Loose soil	Areas with loose or soft soils can cause degraded autoguidance performance. To improve performance in these applications, increase the steering aggressiveness from **100%** in **5%** increments until you achieve acceptable performance.
Slopes	Significant slopes can cause degraded autoguidance performance. To improve performance in these applications, increase the steering aggressiveness from **100%** in **5%** increments until you achieve acceptable performance.

Adjust menu

The “Adjust” menu in a Map User-Defined Window (UDW) provides flexibility in the use of your recorded swaths. Sometimes you need to adjust the route your vehicle drives because of degrading accuracy of Global Navigation Satellite System (GNSS). Operational requirements may require you to make slight adjustments to a recorded swath. Or you may need to skip swaths at regular intervals.

NOTE: *You can configure armrest buttons to perform nudge adjustments. See “Sprayer card configurable controls” (**3-23**).*

In a Map User-Defined Window (UDW), press the “Adjust” icon to open the “Adjust” menu.



NHIL20PLM0049AA 1

The “Adjust” drop-down menu provides access to the following functions:

- Nudge
- Remark
- Swath skipping

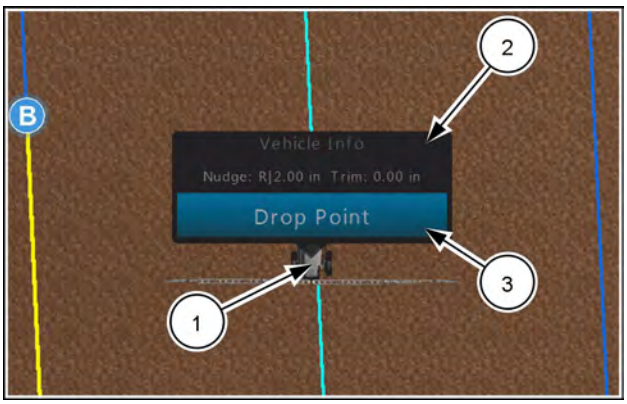
RAPH21PLM1537BA 2

Nudge

You can review the nudge status any time in a map UDW. Press the vehicle symbol **(1)**. An annotation **(2)** appears showing the nudge status.

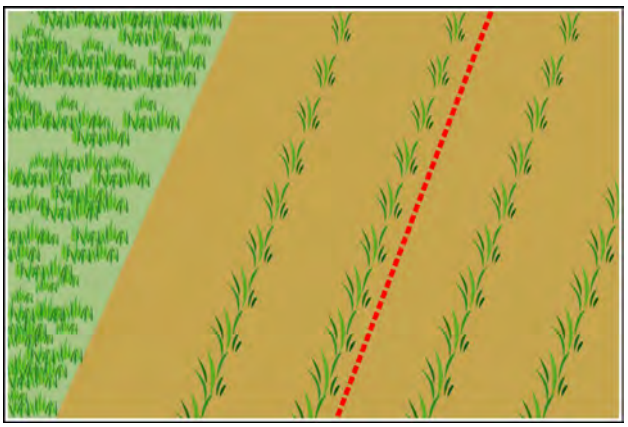
Press anywhere in the map except for the “Drop Point” button **(3)** to close the annotation.

See “Landmarks” (**5-127**) for an explanation of the “Drop Point” button.



RAPH23PLM0167AA 3

Global Navigation Satellite System (GNSS) position can drift slowly over time with SBAS and PPP correction technologies. While pass-to-pass accuracy is high, repeatability from day-to-day, week-to-week, and year-to-year is less accurate because of the GNSS position drift. The operator notices this inaccuracy when the vehicle drifts to the left or right of the intended swath.



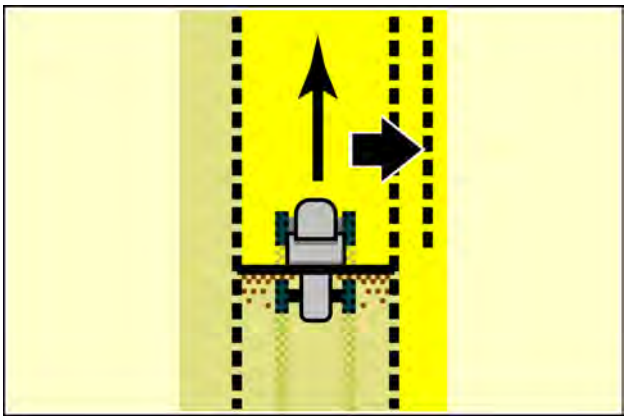
RCPH09DSP152BBG 4

See “Nudge” (**5-117**) for more information about this function.

NOTE: *The “Nudge” window is not available in “Lightbar” mode. Use the “remark” window to change the position of the swath or record a new swath if necessary.*

NOTE: *The “Nudge” feature is only available for Multi-Swaths when “Drive Only” mode is active. See “Multi-Swath+” (**3-1**).*

Drift is typically detected by using landmarks in the field. The swath pattern does not align to a field border the way it did in the past, or the vehicle center line does not align to the standing crop the way it did in the past.

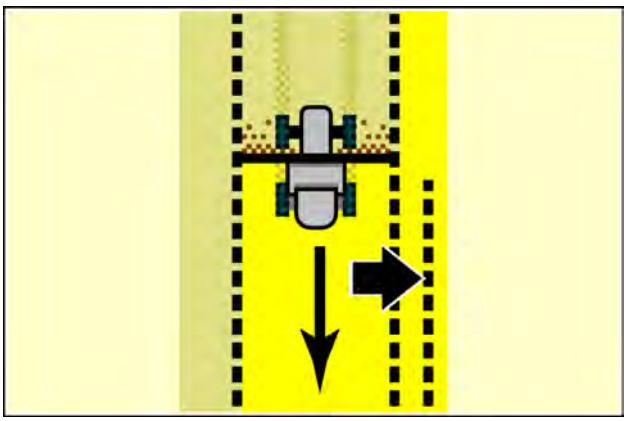


RCPH09DSP153BBG 5

Drift is related to north-south and east-west coordinates and not the vehicle direction of travel.

For example, if a vehicle is traveling from south to north, the vehicle drifts to the west away from the intended swath.

If the vehicle is traveling from north to south, the vehicle again drifts to the west away from the intended swath.



RCPH09DSP154BBG 6

The drift is consistently to the west, regardless of the direction of travel.

Remark

Use the “Remark” menu to adjust the recorded swath to the current position of the vehicle. The remark feature uses the recorded swath pattern at a new location and reports the distance from the recorded swath with the menu. The new location is exactly parallel to the recorded swath location.

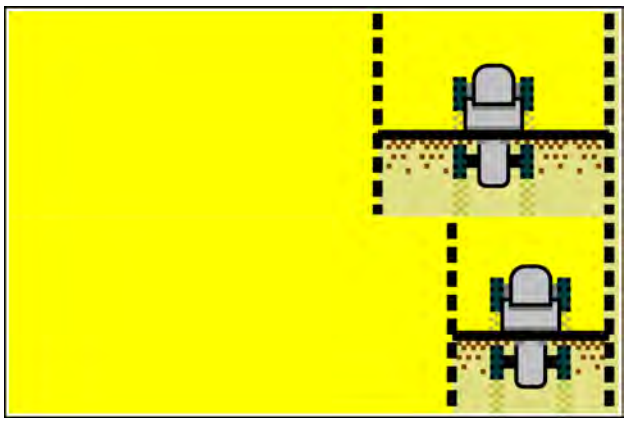
Remark sets the nudge setting to zero.

Remark does not change the marked location of the recorded swath. Setting The “Remark” distance setting to zero returns the swath pattern to its recorded location.

NOTE: *The “Remark” menu is not available for Multi-Swaths.*

Remarking a swath is very useful for shifting a swath to a different starting distance from a field border with a larger or smaller implement.

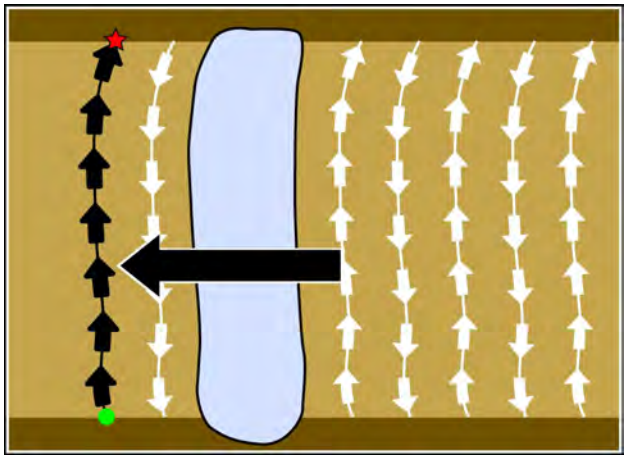
Selecting a larger or smaller implement or header automatically changes the distance between passes, but does not change the position of the swath pattern relative to the left or right field border.



RCPH09DSP168BBG 7

In limited cases, you can shift a swath pattern to clear a large obstacle (e.g., a fence, tree line, road, or waterway) that is in conflict with the recorded pass pattern.

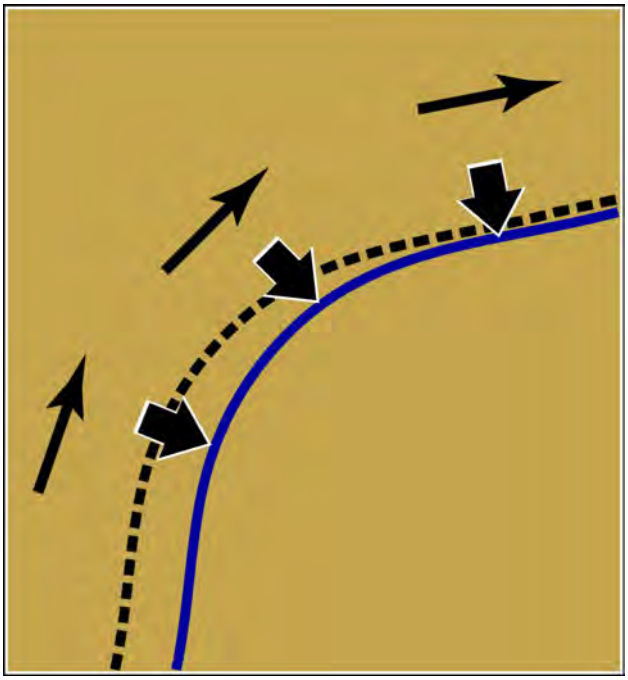
In most cases, the swath pattern established to the left of the obstacle cannot be used on the right side without creating a large coverage gap.



RCPH09DSP169BBG 8

Do not use the “Remark” menu to compensate for drift on swaths with curves, particularly when complex curves are recorded or when the pattern curves more than **180°**.

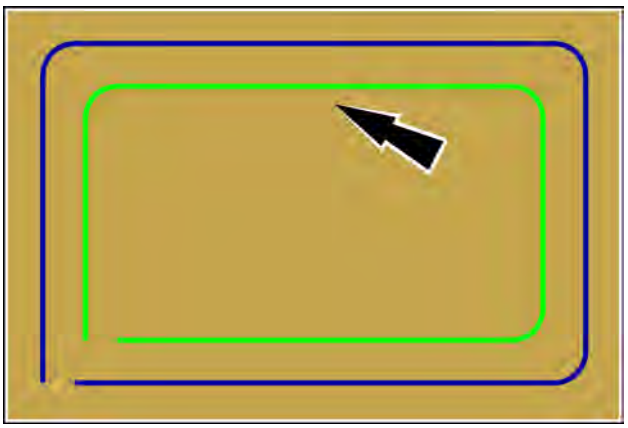
When nudge is used to compensate for drift, correction is applied perpendicular to the curved swath to shift the vehicle and implement (or header) back to the intended path.



RCPH09DSP158BBG 9

When the remark feature is mistakenly used to correct for drift, it creates a new swath that is equally spaced from the recorded swath for its entire path.

See “Remark a swath” (**5-121**) for more information about this function.



RCPH09DSP170BBG 10

Swath skipping

Swath skipping prevents the vehicle from engaging on specific swaths during field operation when swaths must be skipped. This may be required when two vehicles are working the same field or when intercropping practices are in use.

The swath skipping function serves as a visual aid if you would like to skip one or more swaths in the field every pass.

The AccuTurn feature calculates end-of-row turns to skip swaths in the manner you select in the “Skip” menu.

You can skip from one to twelve swaths.

NOTE: *When the swath skipping function is switched OFF, no swaths are skipped.*

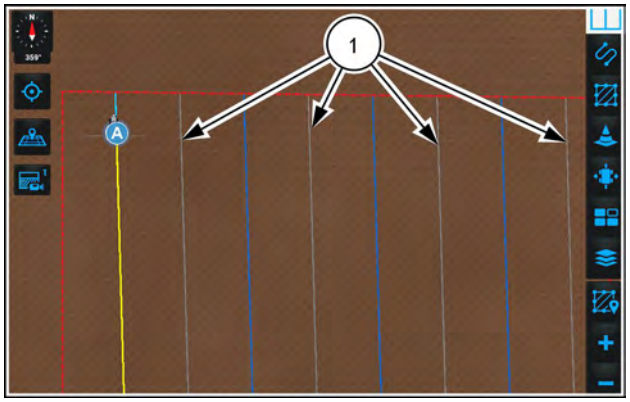
Swath skipping works on the following swath types:

- Straight
- Heading
- Curve
- Pivot
- Field swath – interior

The swath skipping selections are saved when you turn the vehicle key to the OFF position.

See “Swath Skipping” (**5-125**) for more information about this function.

In this example, the number of skipped swaths is one, because there is one skipped swath **(1)** between the active swaths.



RAPH23PLM0106AA 11

Nudge

Nudge is the tool that compensates for GNSS drift and is available in both automatic and manual modes.

To move the vehicle back on-line, a nudge is always to the left or to the right. The right-arrow symbol represents a nudge to the right. The left-arrow symbol represents a nudge to the left.

NOTE: *Nudge is actually a directional shift east/west or north/south, not truly left or right of the swath.*

Since nudge can be applied multiple times to bring a vehicle on-line, the “Nudge” window reports the accumulated nudge value relative to the current vehicle heading.

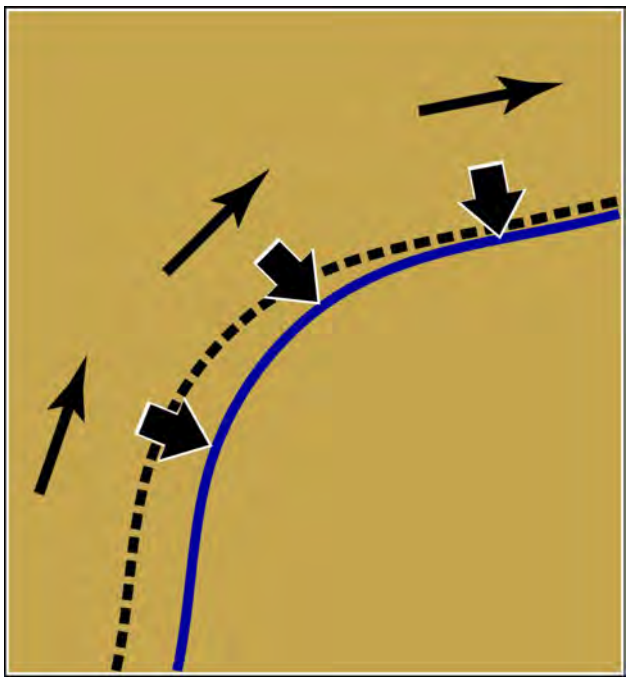
The accumulated nudge distance is reset to zero each time the display is powered down.

NOTE: *The Global Navigation Satellite System (GNSS) signal will likely drift before the system is restarted, so the nudge correction for one work session would be incorrect for the next work session.*

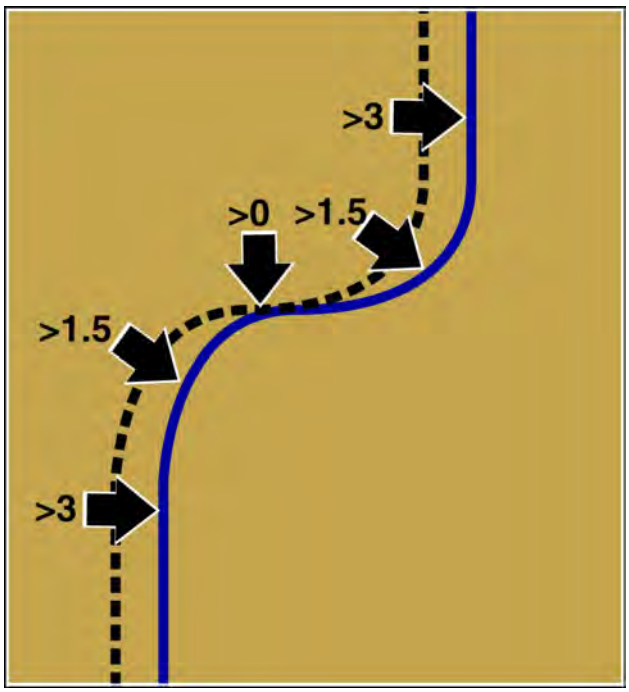
The accumulated nudge distance is also reset to zero when a new swath is selected.

Nudge for a swath with curved elements (curve, circle, spiral) is always applied in a direction perpendicular to the vehicle heading. The “Nudge” window reports the value for this perpendicular correction.

In this example, the applied nudge that is reported in the “Nudge” window varies with the changing curvature of the swath to compensate for drift.

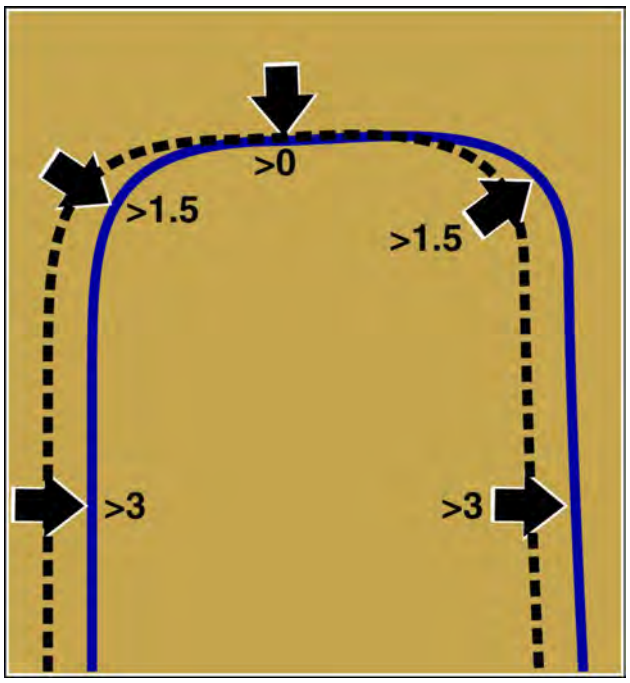


RCPH09DSP158BBG 1



RCPH09DSP159BBG 2

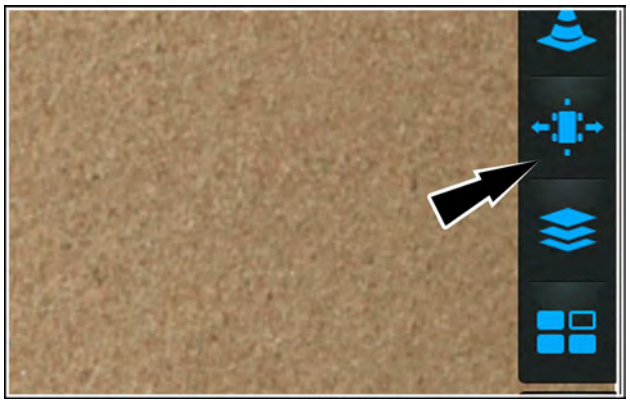
This example also illustrates that the applied nudge that is reported in the “Nudge” window varies with the changing curvature of the swath to compensate for drift.



RCPH09DSP160BBG 3

NOTE: *You can configure armrest buttons to perform nudge operations. See “Sprayer card configurable controls” (**3-23**).*

To apply a nudge to the swath, press the “Adjust’ icon within a Map User-Defined Window (UDW). The “Adjust” menu appears.

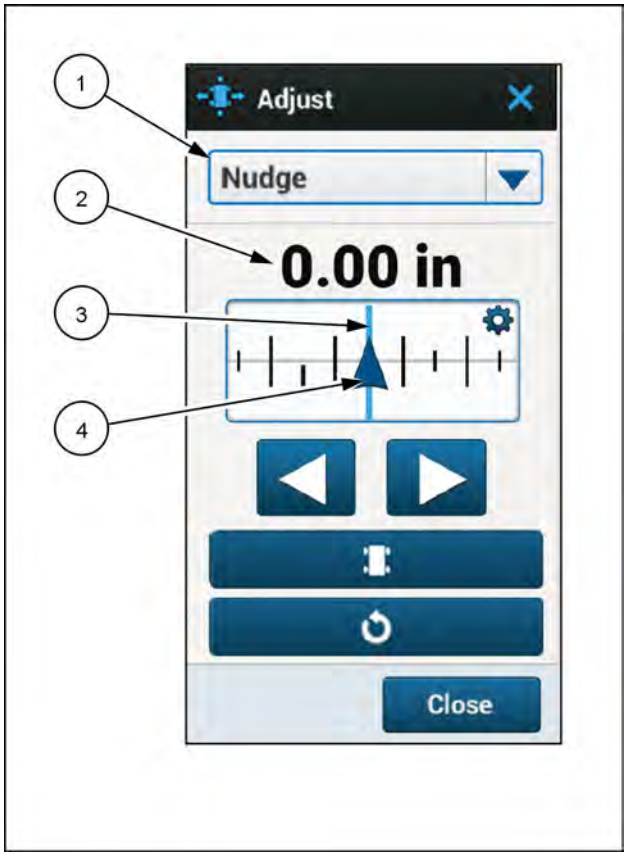


NHIL20PLM0049AA 4

In the drop-down **(1)**, select "Nudge." The “Nudge” controls appear.

Before you apply any nudge value, the indicator **(2)** shows zero. The swath line **(3)** in the vehicle gauge appears centered and the vehicle icon **(4)** appears over the swath line.

The “Left Arrow” and “Right Arrow” buttons adjust the nudge value. The maximum nudge value is **1.5 m** (**5.0 ft**) Press the arrows buttons as needed to nudge the vehicle and correct for drift.



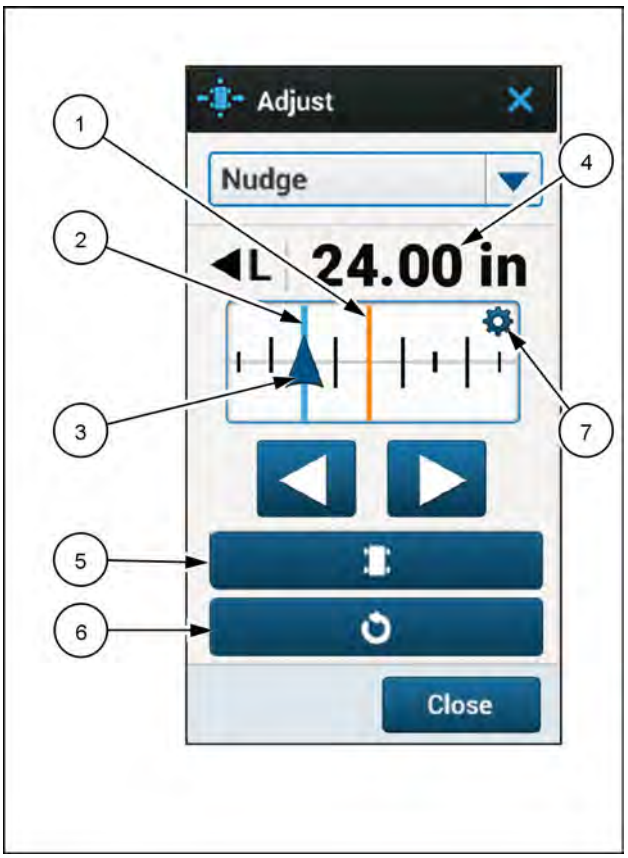
RAIL19PLM0609BA 5

After you apply a nudge, an orange line **(1)** appears. The orange line denotes the original swath line. The blue line **(2)** moves to the position you commanded. The blue line represents the desired path for the current operation.

NOTE: *Nudge is applicable to the current operation only. The originally recorded swath does not change.*

The vehicle arrow symbol **(3)** moves the preset nudge amount. The vehicle arrow symbol moves to the corrected position **(4)** in the indicator when you nudge the vehicle to fully correct for drift.

The corrected position gives a distance from the original position and includes an indication of whether it is to the left or right of the original position.



RAIL19PLM0610BA 6

Modifying nudge value

Press the “Set to current” button **(5)** to change the nudge value to the value of the distance between the current swath and the current vehicle location.

Press the “Reset” button **(6)** to change the nudge value to zero.

When you are finished using the “Nudge” menu, press the “Close” button.

Modifying Nudge Increment

To change the nudge value to zero, press the “Reset” button **(6)**.

NOTE: *The “Reset” button is only active when the nudge value is not zero.*

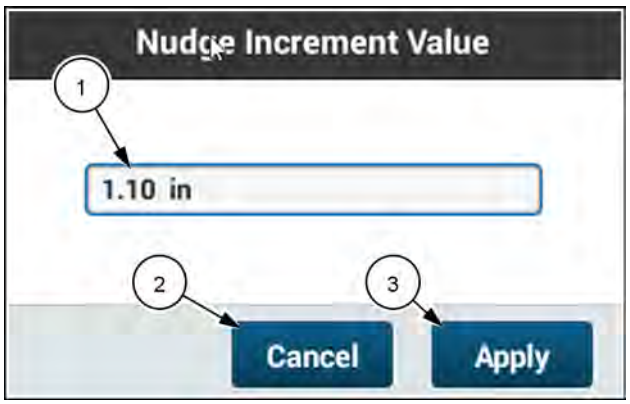
To change the nudge increment value to a number other than zero, press the “gear” icon **(7)**. The “Nudge Increment Value” window opens.

Press the value field **(1)** and enter a new nudge value.

Using the keyboard, enter the new nudge increment value.

Press the “Apply” button **(3)** to accept your change.

NOTE: *Press the “Cancel” button* ***(2)*** *to discard any changes and close the window.*

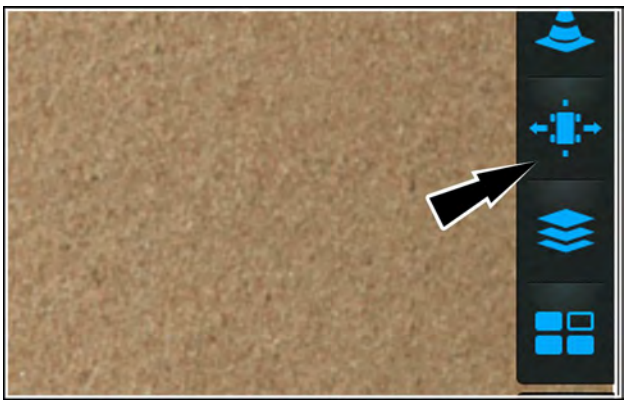


RAIL20PLM1108AA 7

Remark a swath

The remark function modifies the placement of a swath relative to its originally recorded location. The actual swath pattern is not modified when a remark is applied.

To remark a swath, press the “Adjust” icon within a Map User-Defined Window (UDW). The “Adjust” menu appears.



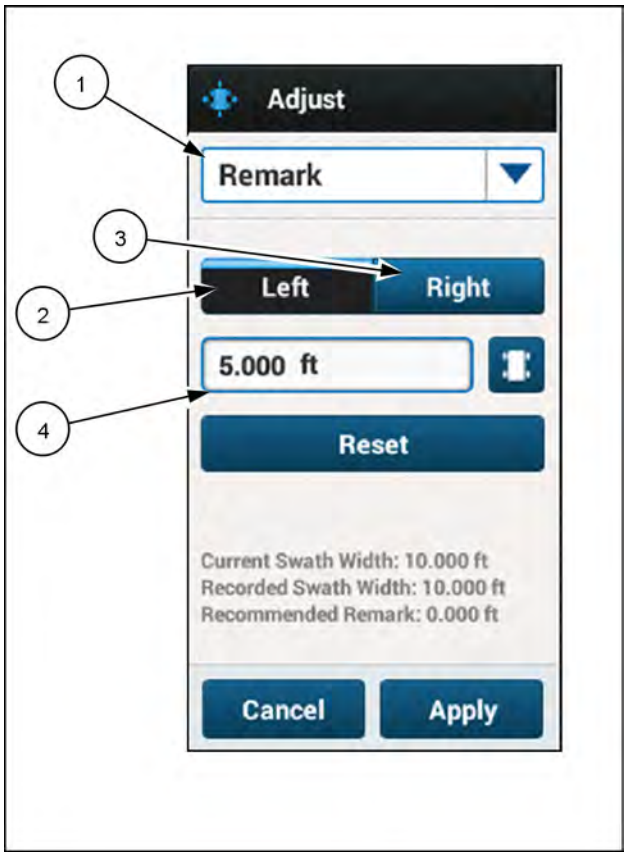
NHIL20PLM0049AA 1

In the drop-down, choose the “Remark” item **(1)**. The “Remark” controls appear in the menu. The default value of zero appears in the input field.

The current swath does not appear in the map because it is under the recorded swath.

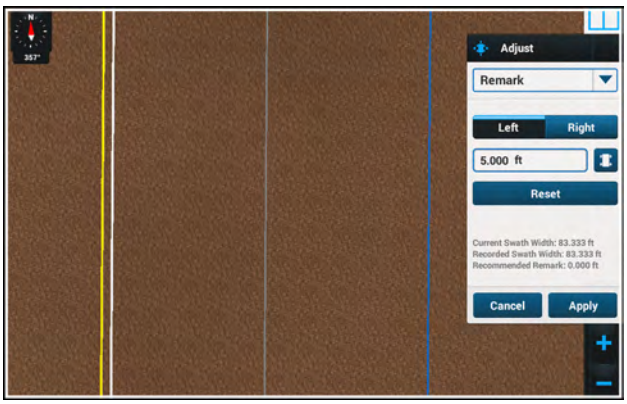
Press the “Left” **(2)** or “Right” **(3)** button to choose the direction in which you will place the remarked swath.

Press the input field **(4)** to enter the desired value of the remark distance.



RAPH22PLM0920BA 2

The remarked swath appears in the map.



RAPH23PLM0109AA 3

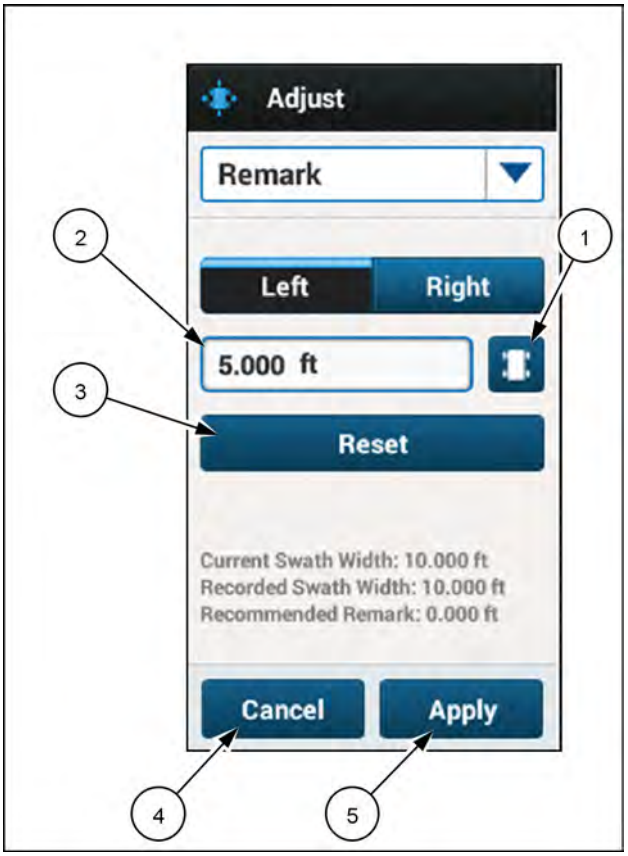
If needed, press the “Set to Current” button **(1)** to relocate the swath to the current position of the vehicle.

The value in the input field **(2)** changes to the current location value. The Left / Right will toggle automatically based on the current vehicle location to the swath.

If needed, press the “Reset” button **(3)** to return the remarked swath to the zero position.

Press the “Cancel” button **(4)** to discard your changes and close the “Adjust” menu.

Press the “Apply” button **(5)** to accept your changes. The “Confirm Changes” window appears.



RAPH22PLM0920BA 4

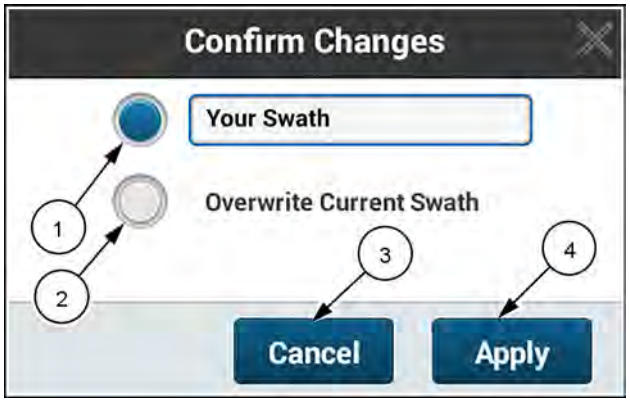
The “Confirm Changes” window contains options to save the remarked swath under a new name, or to overwrite the existing remarked swath. To select an option, press the radio button in front of the desired option.

To create a new swath at the remarked location, press the input field radio button **(1)**. Press the input field to rename as needed. User will be able to recall both locations in the future.

To overwrite the existing remarked swath, press the “Overwrite Current Swath” radio button **(2)**. This will replace the active path with the new remarked path. You will be able to reset to the original location if needed, but the remark value will be lost.

Press the “Cancel” button **(3)** to discard your changes and return to the “Remark” menu.

Press the “Apply” button **(4)** to accept your settings.

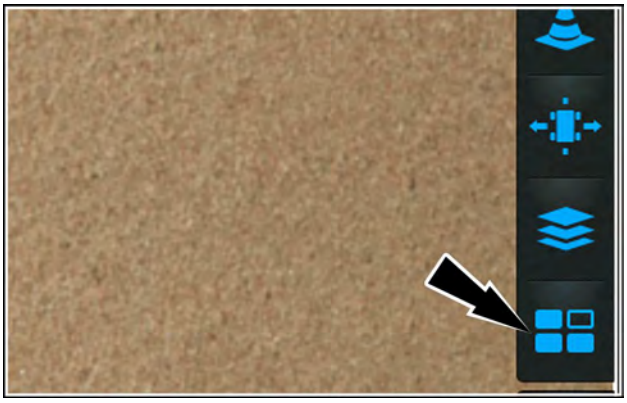


RAIL19PLM0186AA 5

Remark using the widget

The “Swath Adjust” widget when enabled resides on top of the map. You can use the “Swath Adjust” widget to remark a swath without the need to open the “Swath” menu.

On the right-hand menu, press the “Widgets” icon.



NHIL20PLM0049AA 6

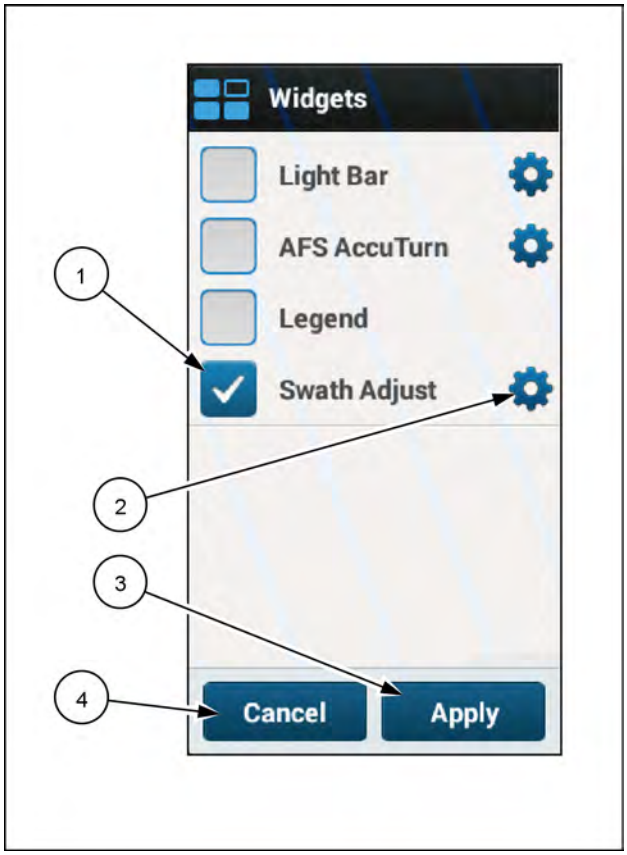
The “Widgets” menu opens.

Press to check the “Swath Adjust” check box **(1)**. The “Adjustments” widget opens.

The gear icon **(2)** opens the “Remark Increment Value” window.

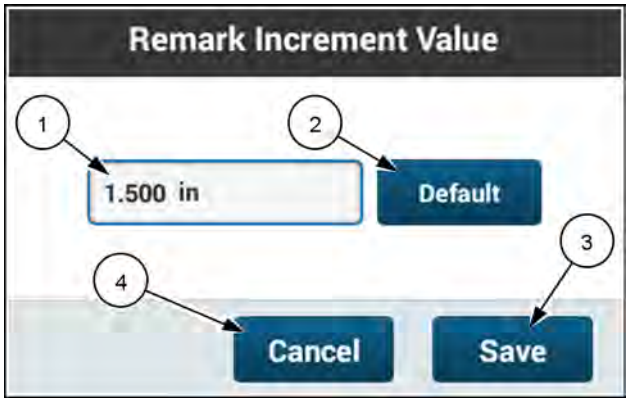
Press the “Apply” button **(3)** to accept your changes to the “Widgets” menu.

Click the “Cancel” button **(4)** to close the “Widgets” menu without accepting your changes.



RAPH22PLM0921BA 7

Press the gear icon in the “Widgets” menu if you wish to change the measurement increments by which the swath moves each time you remark it. The “Remark Increment Value” window appears.



RAPH22PLM1681AA 8

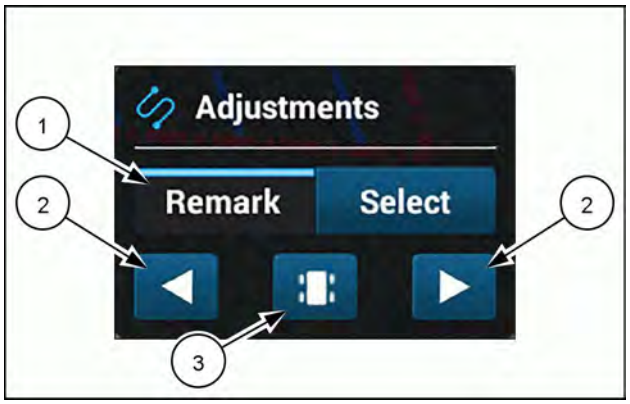
Press the measurement field **(1)** to open a keypad. Enter the desired remark increment.

If you wish to return to the default remark increment, press the “Default” button **(2)**. The default remark increment is **2.540 cm** (**1.000 in**).

Press the “Save” button **(3)** to accept your change.

Press the “Cancel” button **(4)** to discard your change and close the “Remark Increment Value” window.

The “Adjustments” widget appears in the map.



RAPH22PLM1682AA 9

If needed, press the “Remark” toggle **(1)** to select remarking.

The left and right-arrows **(2)** move the swath lines by the configured increment every time you press an arrow. As you press the left and right-arrows, you can observe the swath lines move in the map. Move the swath until it is in the desired location. When you remark a swath, you can immediately use it.

Remarking a swath in the widget also automatically saves a new swath, which appears in the swath “Manage” tab in the “Swath” menu.

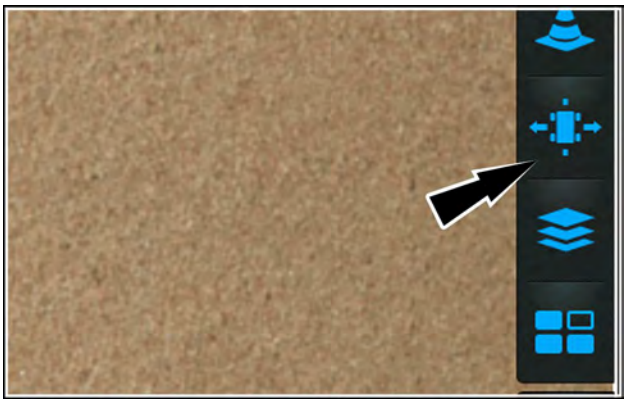
If needed, press the “Set to Current” button **(3)** to relocate the swath to the current position of the vehicle.

Swath skipping

Set the swath skip pattern

When you are ready to begin operating and wish to skip swaths, press the “Adjust’ icon within a Map User-Defined Window (UDW). The “Adjust” menu appears.

NOTE: *Switching OFF swath skipping is also done in the “Adjust” menu.*



NHIL20PLM0049AA 1

In the drop-down, choose "Swath Skipping" **(1)**. The "Swath Skipping" controls appear in the menu.

Press the button **(2)** as needed to turn swath skipping ON. The generated swath lines that will be skipped appear subdued in the map.

NOTE: *Turning swath skipping ON in the “Adjust” menu disables swath skipping controls in the AFS Accuturn map widget.*

The “Drive” counter **(3)** defines the number of adjacent swaths driven between skipped swaths.

The “Skip” counter **(4)** defines the number of adjacent swaths skipped between driven swaths.

Press the appropriate “Plus” button to increase the number of skips and drives.

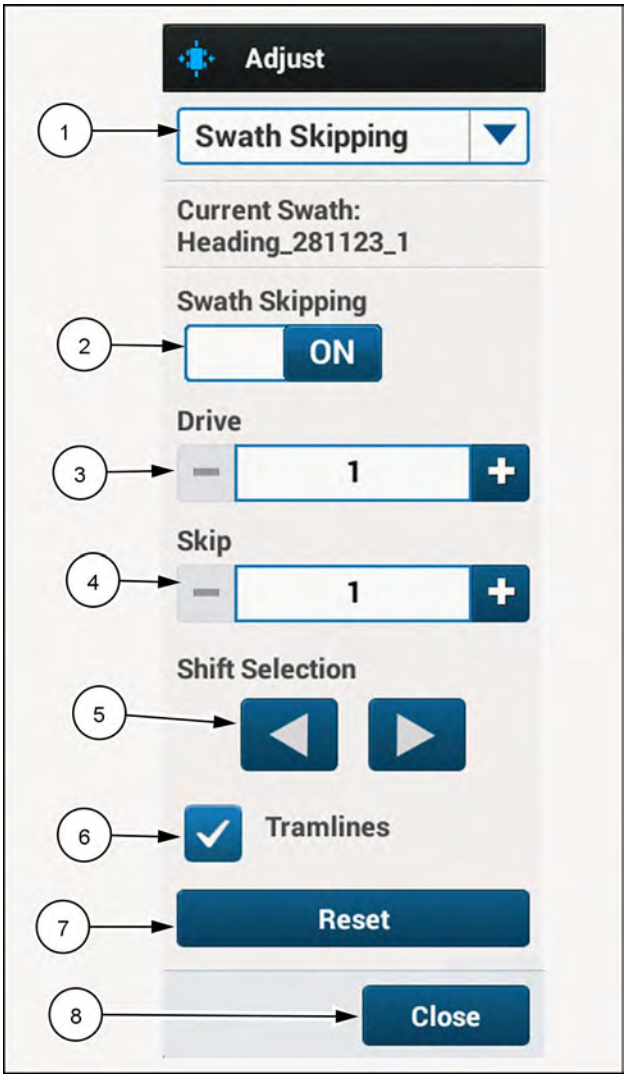
Press the appropriate “Minus” button to decrease the number of skips and drives.

“Shift Selection” **(5)** moves the swath pattern or tramlines to the left or right as required for your operation.

“Tramlines” **(6)** create a visual reference to assist you in identifying swaths to manually disable during planting operations.

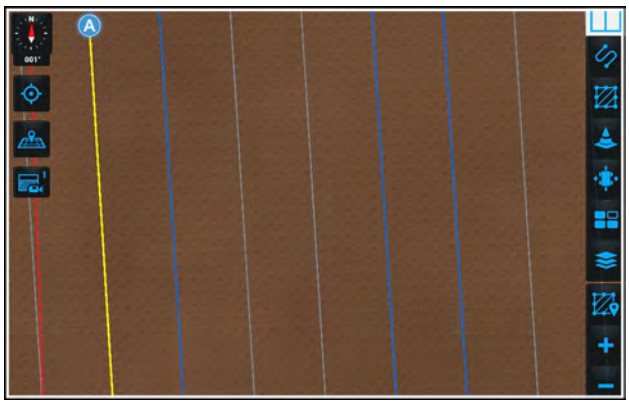
Press the “Reset” button **(7)** to restore any changes to their default value.

Press the “Close” button **(8)** to apply your settings.



NHPH23PLM0744BA 2

In this example, if the “Drive” counter is set to “2” and the “Skip” counter is set to “2,” there are two driven swaths, then two skipped swaths, then two driven swaths, then two skipped swaths, and so on. This pattern repeats through the entire field.



RAPH23PLM0110AA 3

Adjust the swath skipping pattern

Swipe up with one finger to pan down on the “Swath Skipping” menu.

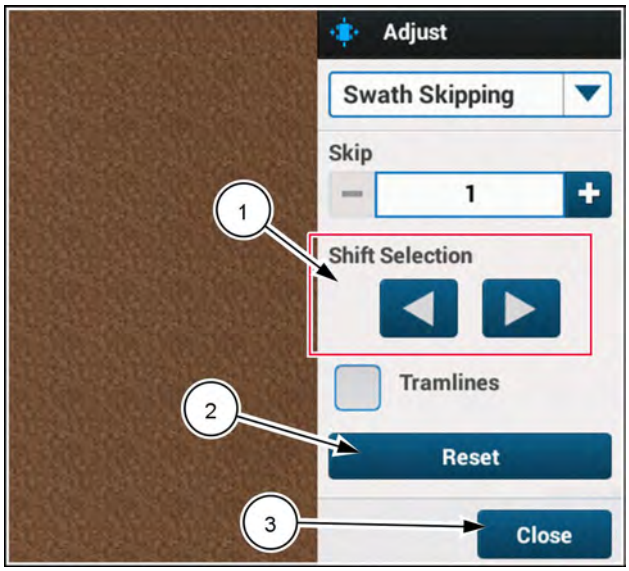
The swath pattern can be adjusted left or right to compensate for the vehicle location or to suit your operation.

NOTE: *Autoguidance must be disengaged before you can adjust the swath skipping pattern.*

Use the “Left Arrow” and “Right Arrow” buttons **(1)** to adjust the swath pattern. The swath pattern will change as the buttons are pressed.

Press the “Reset” button **(2)** to return to the original swath pattern.

Press the “Close” button **(3)** to close the “Adjust” menu.



NHPH23PLM1552AA 4

Tramlines

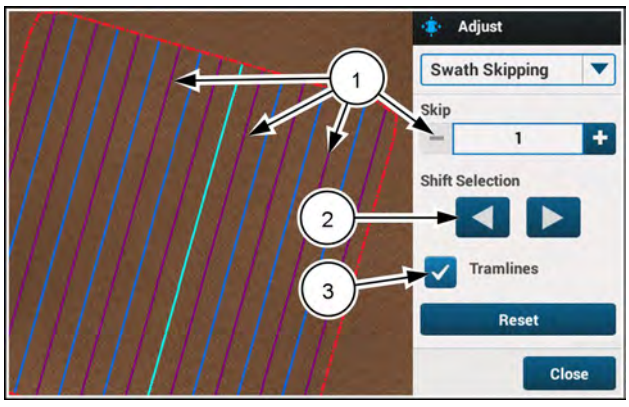
Tramlines utilize the swath skipping feature to create a visual indicator. When enabled, the set number of skipped swaths **(1)** now display in purple as tramlines.

This assists in identifying which swaths to manually disable on planter heads, allowing you to rely on the visual indicators on the map.

When “Tramlines” is enabled, “Shift Selection” **(2)** moves the tramline pattern to the left or right as desired.

Select “Tramlines” by pressing the check box **(3)**.

NOTE: *When “Tramlines” is enabled, the “Swath Skipping” feature is solely used to visually indicate tramlines. No swaths are skipped and tramline swaths can be engaged.*



NHPH23PLM1551AA 5

Landmarks

One field can contain multiple landmarks as needed. All landmarks are saved to the field. A point, line, or area landmark can be created and viewed on the selected field. The display software will warn you of an impassable landmark by default or selected passable landmark within a set time from the landmark depending on speed of the machine.

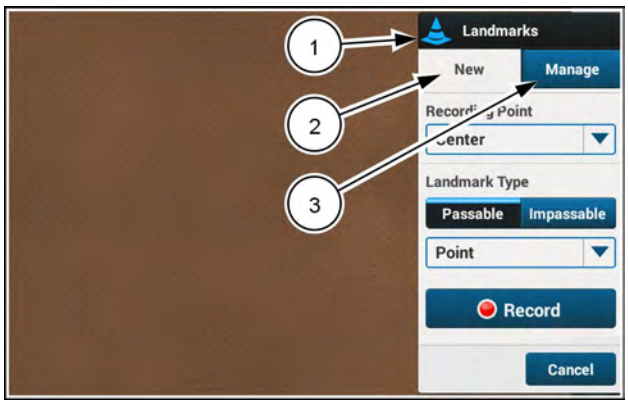
Creating landmarks

Press the “Landmarks” button from the right-hand menu of a Map User-Defined Window (UDW).

NHIL20PLM0086AA 1

By pressing the ”Landmarks” button from the right hand menu, a “Landmarks” menu panel **(1)** will appear from the right hand side of the display with two tabs located at the top. The two tabs are:

- New **(2)**
- Manage **(3)**



RAPH23PLM0111AA 2

Creating new landmarks

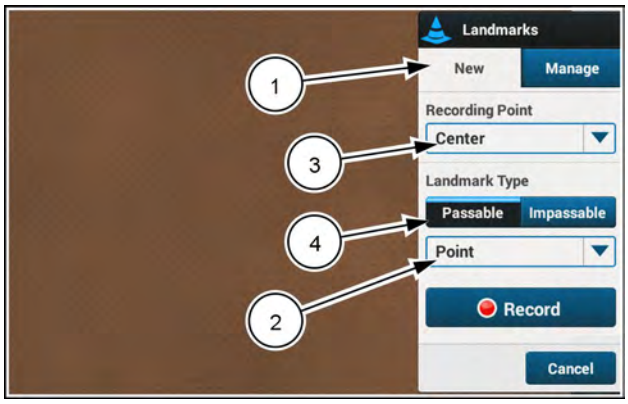
NOTE: *Menu defaults are “Point” for “Landmark Type” and “Center” for “Recording Point”.*

The ”New” tab **(1)** contains two main drop down lists. These drop downs are for “Landmark Type” **(2)** and “Recording Point” **(3)**. Depending on the selected landmark type the menu content will change accordingly.

There are two types of landmarks. These are passable and impassable. In the “New” tab there is a “Landmark Type” toggle **(4)** with choices for “Passable” or “Impassible.”

In the “Landmark Type” drop down list there are three different types of landmarks available. The landmark types available are:

- Point
- Line
- Area

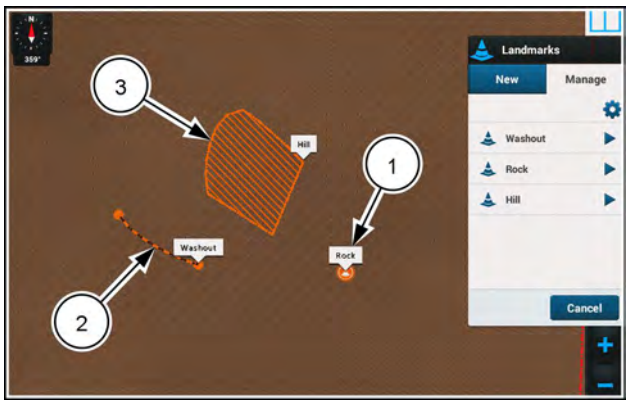


RAPH23PLM0111AA 3

A point landmark **(1)** is mapped as single GPS coordinates marked with the desired recording point. A point landmark is designed for marking any small landmark – a rock, boulder, post, or similar landmark.

A line landmark **(2)** is mapped as a narrow line of GPS coordinates, marked by the path that the vehicle travels. A line landmark is designed for marking a long but narrow landmark - a shallow stream, gully, trench, or similar landmark.

An area landmark **(3)** is mapped as a polygon (similar to a boundary), marked by the path that the vehicle travels around the landmark. An area landmark is designed for marking any large landmark – a pond, river, tree, grove, or similar landmark.

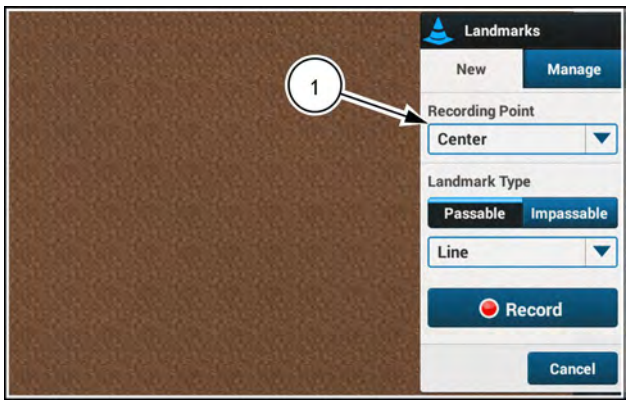


RAPH23PLM0132AA 4

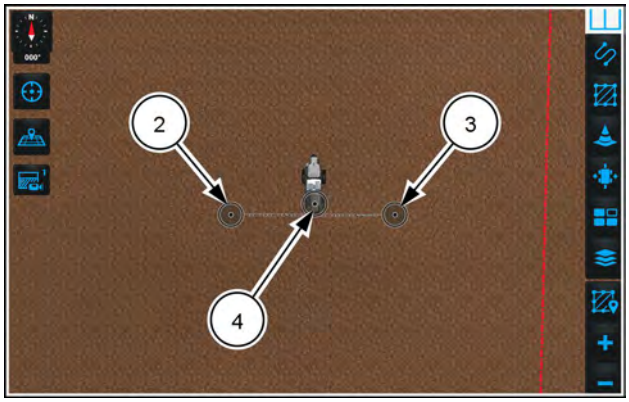
In the “Recording Point” drop down **(1)** you must indicate a horizontal position (based on the attachment width) that should be used to record the landmark either left **(2)** or right **(3)**. If using center **(4)** to record a landmark, the recording point will be the vehicle.

NOTE: *The center recording point **(4)** will be the only one available if an attachment is not used.*

NOTE: *This illustration shows all three recording points for illustrative purposes only. The software shows only the selected recording point.*

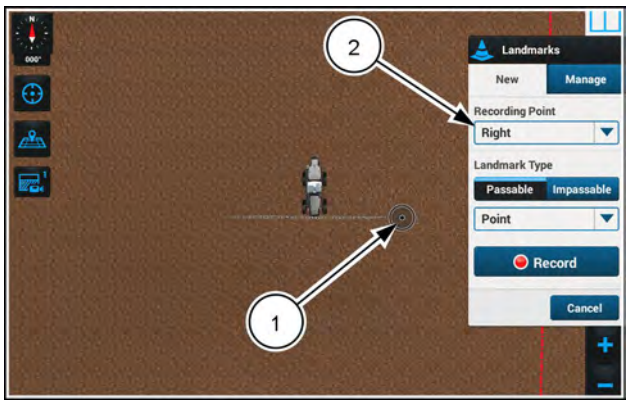


RAPH23PLM0118AA 5



RAPH23PLM0117AA 6

On the map, the selected recording point **(1)** will be displayed. To change the location of the recording point, select the desired point from the “Recording Point” drop down list **(2)** and the recording point will change on the display.

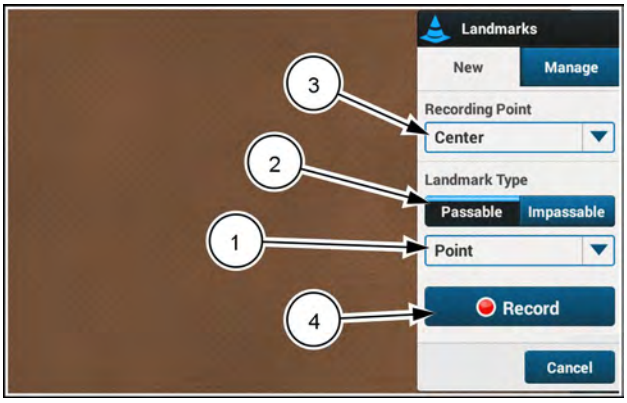


RAPH23PLM0112AA 7

Creating a point landmark

There are two options when placing a point landmark. You can either press the “Record” button **(4)** on the “Landmarks” menu panel, or you can use the “Quick Point” function.

Press the “Landmarks” button from the right hand menu to use the “Landmarks” menu panel to record a point landmark.



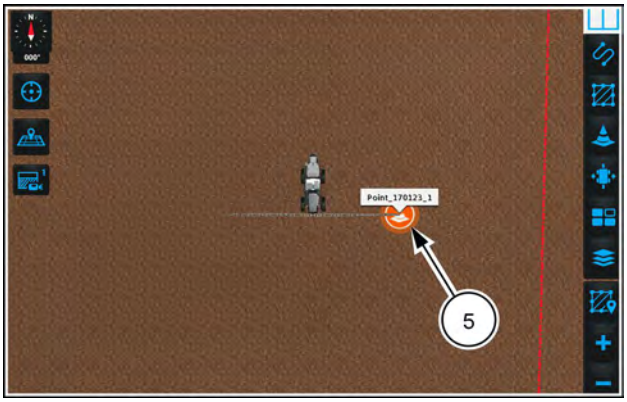
RAPH23PLM0111AA 8

Select “Point” from the “Landmark Type” drop down **(1)** list.

Select either “Passable” or “Impassable” from their respective buttons **(2)**.

Select the desired recording point from the “Recording Point” drop down list **(3)**.

When ready to drop the point landmark, press the “Record” button **(4)** and a point landmark icon **(5)** with annotation will display at the current GPS position of the selected recording point.



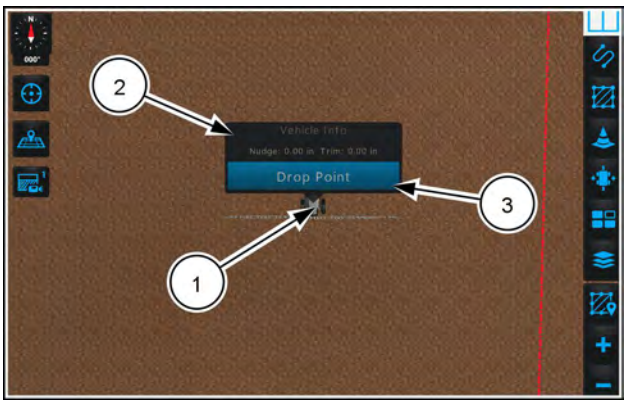
RAPH23PLM0115AA 9

To rename a point landmark, or to change to a custom point landmark icon, refer to “Renaming Icons” in this section.

To add a quick point landmark, press the vehicle symbol **(1)** within the map. This will bring up the “Info“ window **(2)**.

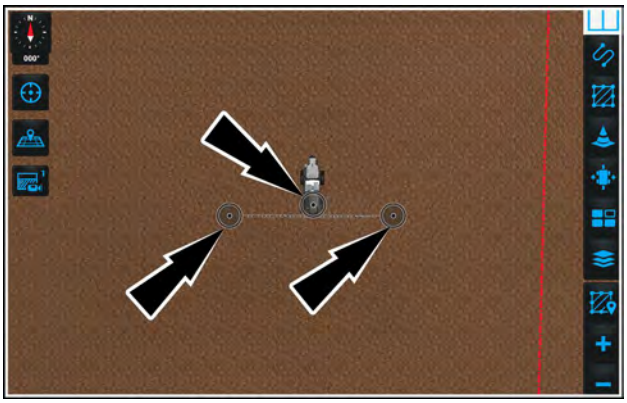
NOTE: *It is not required to be in the “Landmarks” menu to add a quick point. This can be done at any time by pressing the vehicle graphic on the display.*

At the bottom of the window, prepare to drop a quick point by pressing the “Drop Point” button **(3)**.



RAPH23PLM0116AA 10

Once the “Drop Point” button is pressed, the “Info” window will close and up to three recording points will appear on the vehicle and attachment (if an attachment is available).

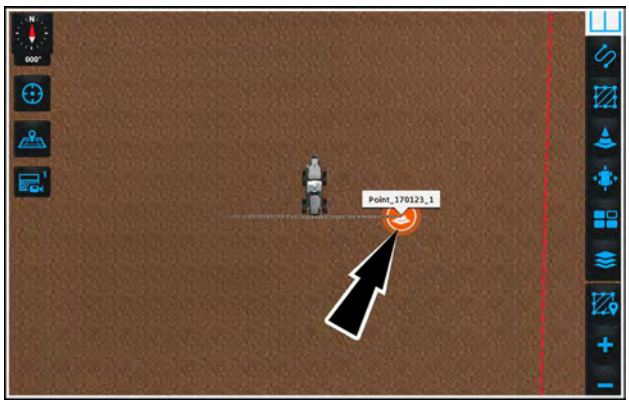


RAPH23PLM0117AA 11

Press the desired recording point (right, left, or center) on the display graphic to drop the point landmark on the map. A default “Landmark Point” icon with a default annotation will display at the selected point on the map. All recording points on the vehicle and attachment in the display will disappear.

NOTE: *After 5 seconds of dropping the point, the annotation for the new point will disappear but will be saved to the landmark.*

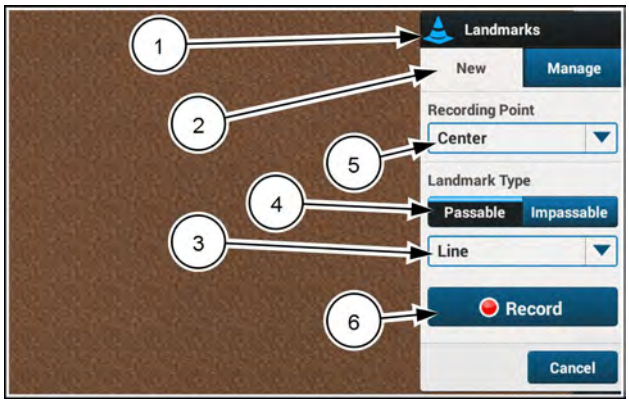
To select a custom point landmark icon or rename the point landmark, refer to “Renaming Icons” in this section.



RAPH23PLM0115AA 12

Creating a line landmark

Press the “Landmarks” button from the right hand menu.



RAPH23PLM0118AA 13

The “Landmarks” menu panel **(1)** will appear on the right hand side of the screen.

On the “Landmarks” menu panel, select the “New” tab **(2)**.

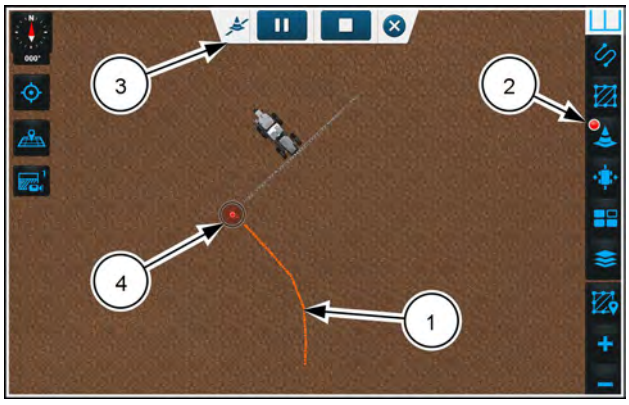
Select “Line” from the “Landmark Type” drop down **(3)**.

Select either “Passable” or “Impassable” from their respective buttons **(4)**.

From the “Recording Point” drop down **(5)**, select the recording point (left, right, or center) that will be used to record the line landmark. A recording point indicator will display at the location of the recording point selected.

Press the “Record” button **(6)** to begin recording.

When “Record” is pressed, an orange dot - dot - dash line **(1)** will start following the vehicle on the display map. The “Landmark” menu panel will close. The right hand menu will appear as soon as the menu panel finishes closing. A recording indicator **(2)** will be added in the top left corner of the “Landmarks” button on the right hand menu. A landmark edit panel **(3)** will slide from the top of the display. The inner circle of the recording point **(4)** will turn into a red “Record” icon displaying that a recording is in progress from the selected recording point.



RAPH23PLM0119AA 14

A line landmark edit panel will consist of:

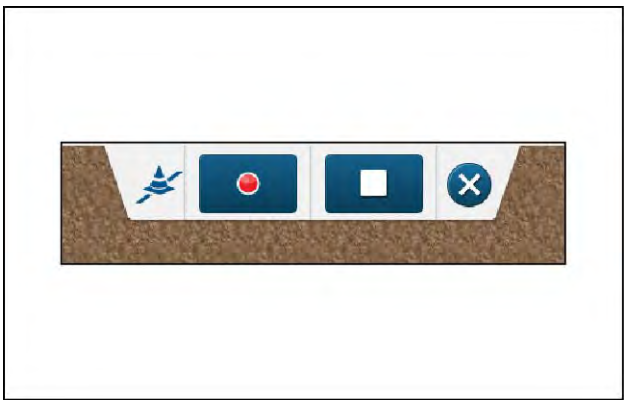
A landmark icon with line indication

“Pause” button if “Record” is selected.

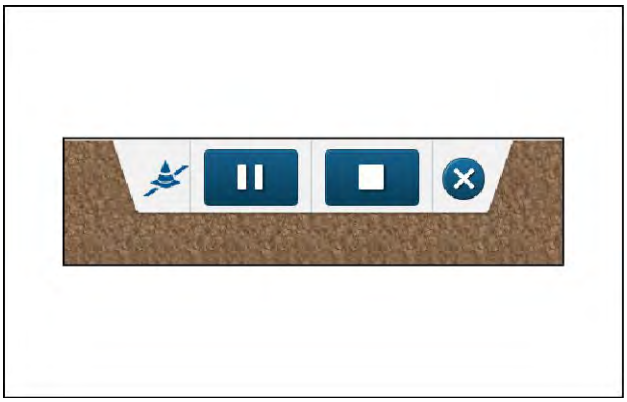
“Record” button if “Pause” is selected.

“Stop” button to complete the landmark recording.

“Cancel” button to cancel the landmark recording.

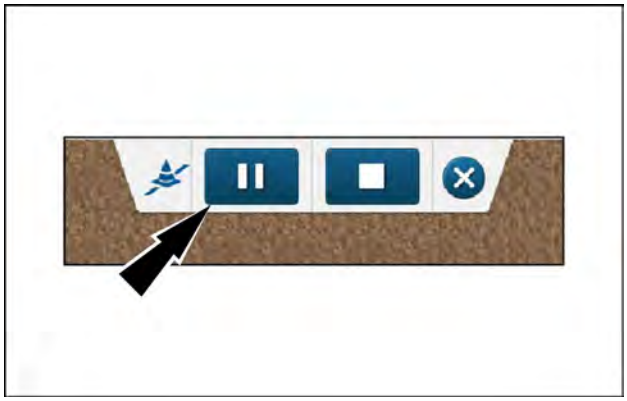


RAIL18PLM1788AA 15



RAIL18PLM1789AA 16

To pause the line landmark recording, press the “Pause” button on the landmark edit panel.

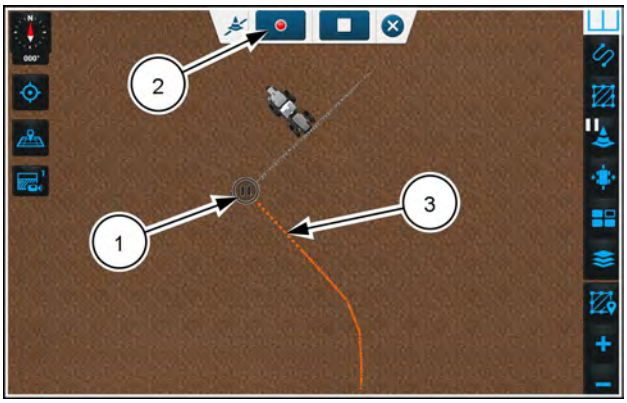


RAIL18PLM1789AA 17

When the pause button is pressed the recording point on the vehicle or attachment **(1)** will update to display a pause status.

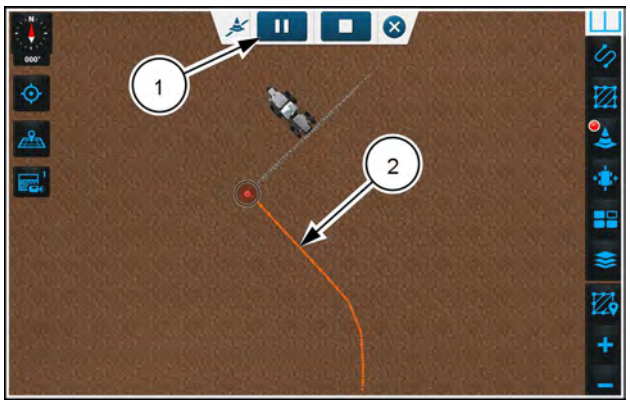
The “Pause” button in the edit panel will change to a record button **(2)**.

When paused, as you continue to move down the field, the dot - dot - dash line will change into a segmented line **(3)** and will link the last recorded point from the landmark line to the recording point on the vehicle or attachment. This line will not follow a recorded path. It will only link a straight segmented line from the last recorded point to the current position of the recording point on the vehicle or attachment.



RAPH23PLM0120AA 18

To resume a recording, press the “Record” button on the edit panel which will then change back to a “Pause” button **(1)**. The orange segmented line which was linking the last recorded point to the current position of the recording point on the attachment or vehicle will change back to a dot - dot - dash line **(2)**. The pause icon at the recording point **(3)** on the vehicle or attachment will change back to a red recording indicator.

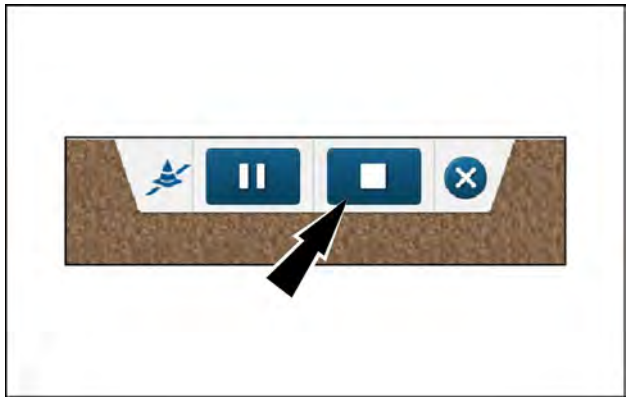


RAPH23PLM0121AA 19

To complete a recording of the line landmark, press the “Stop” button. The edit panel will close by sliding up in the display.

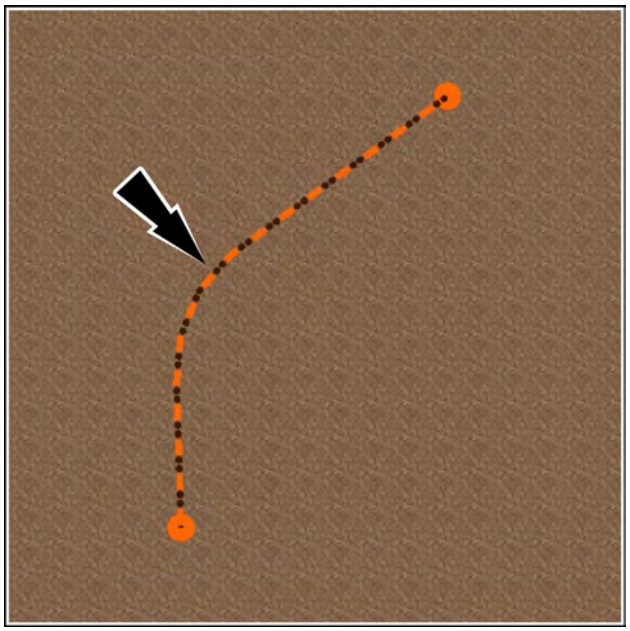
NOTE: *The stop button will be inactive (grayed out) until the vehicle drives* ***3 m*** *(****10 ft****) during an landmark recording.*

The recording indicator on the top left hand corner of the “Landmark” button in the right-hand menu will disappear.



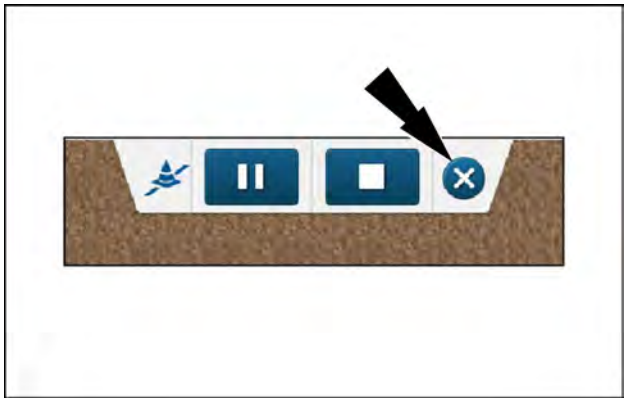
RAIL18PLM1789AA 20

The line landmark will be displayed on the map where it was recorded.



RAIL18PLM1381BA 21

If at any time you would like to cancel the landmark recording process, you can do so by pressing the “Cancel” button.

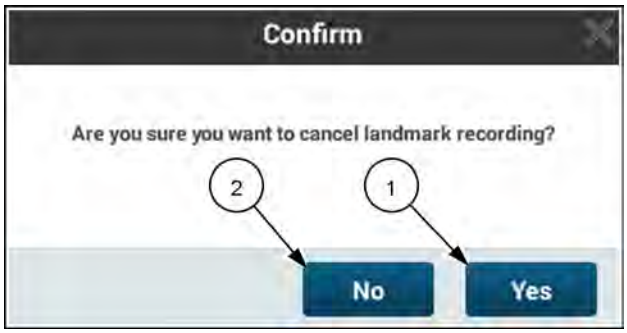


RAIL18PLM1789AA 22

If you cancel the line landmark, a confirmation window will appear asking you to confirm the cancellation of the recording.

Select the “Yes” button **(1)** to confirm cancelling.

Select the “No” button **(2)** to continue recording.



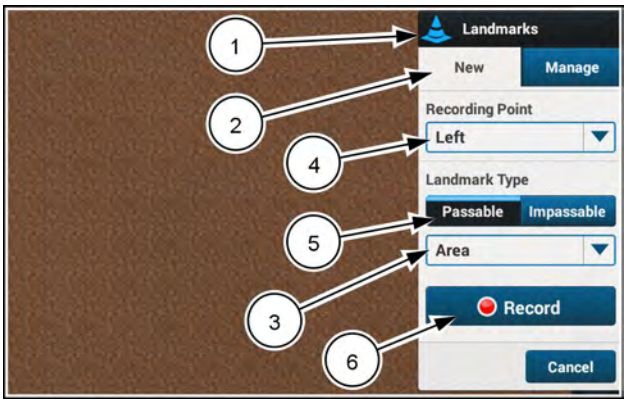
RAIL18PLM1792AA 23

If you press the “Yes” button **(1)**, the “Confirm” window will close and any points placed on the map will disappear. The edit panel will close by sliding back up in the display. The recording icon on the “Landmark” button will also disappear.

If you press the “No” button **(2)**, the “Confirm” window will close and recording will continue.

Creating an area landmark

Press the “Landmarks” button from the right hand menu.



RAPH23PLM0122AA 24

The “Landmarks” menu panel **(1)** will appear on the right hand side.

Select the “New” tab **(2)** on the “Landmarks” menu. Then select “Area” from the “Landmark Type” drop down.

On the “Landmarks” menu panel, select “Area” from the “Landmark Type” drop down **(3)**.

From the “Recording Point” drop down **(4)** select the recording point (left, right, or center) that will be used to record the area. A recording point indicator will display at the location of the recording point selected.

Select either “Passable” or “Impassable” from their respective buttons **(5)**.

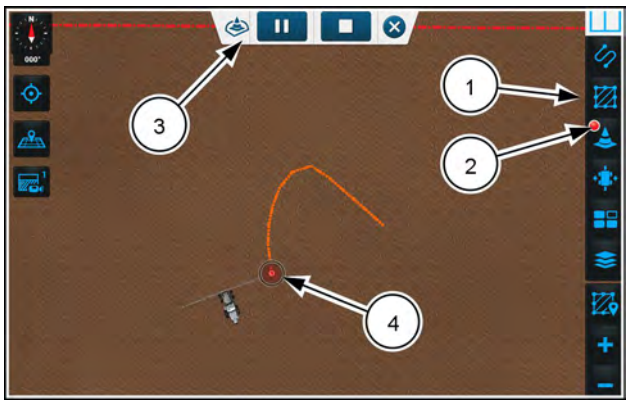
Press the “Record” button **(6)** to begin recording.

Once the area recording has been initiated the landmarks menu panel will close.

The right hand menu **(1)** will appear as soon as the landmarks menu panel closes.

A recording indicator will be added to the top left corner of the “Landmarks” button **(2)** within the right hand menu. The “Landmark” edit panel **(3)** will slide from the top of the display.

The inner circle of the recording point **(4)** will turn into a red “Record” icon displaying that a recording is in progress from the selected recording point.



RAPH23PLM0123AA 25

An area landmark edit panel will consist of:

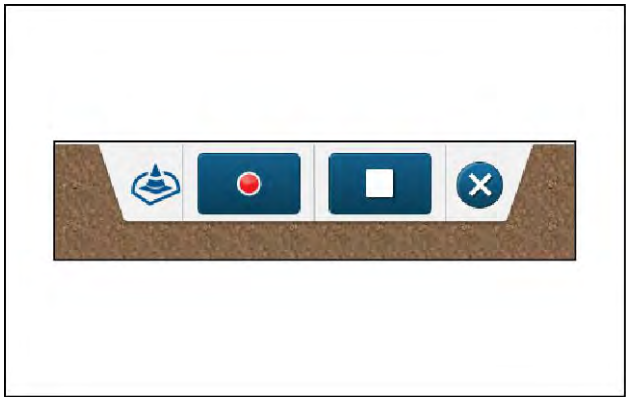
A landmark icon with area indication.

“Pause” button if “Record” is selected.

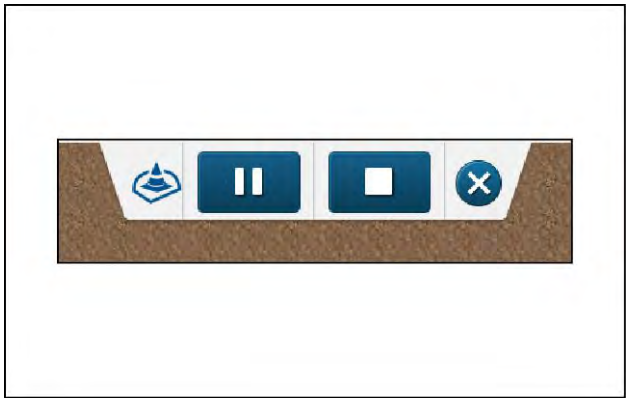
“Record” button if “Pause” is selected.

“Stop” button to complete the landmark recording.

“Cancel” button to cancel the landmark recording.



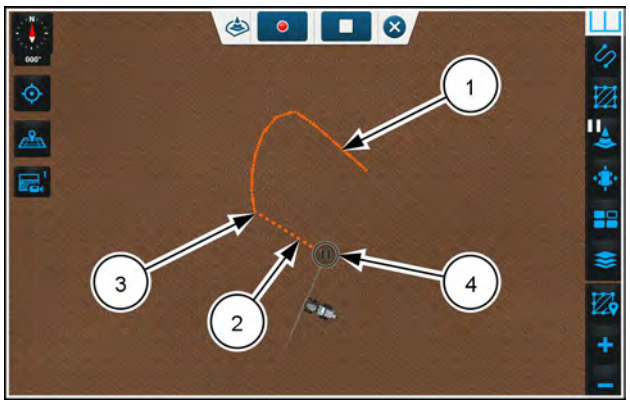
RAIL18PLM1796AA 26



RAIL18PLM1795AA 27

As the vehicle moves across the field in the display, the area line **(1)** will be generated from the chosen recording point. The line for an area landmark will be an orange dot - dot - dash line.

If continued to move down the field while paused, a segmented line **(2)** will link the last recorded point **(3)** from the area landmark line to the recording point on the vehicle or attachment **(4)**. This line will not follow a recorded path, it will only link the straight segmented line from the last recorded point to the recording point on the vehicle or attachment.



RAPH23PLM0124AA 28

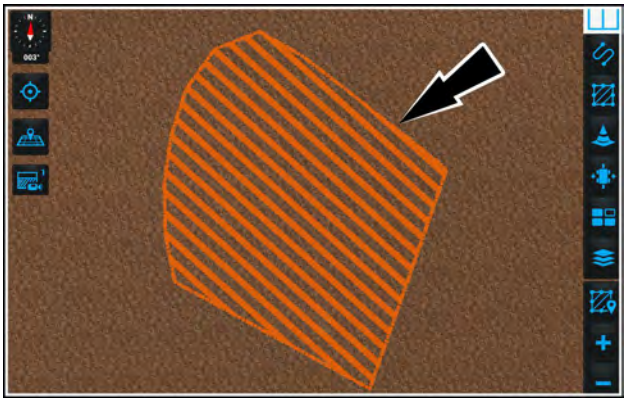
When you resume recording, the dashed line becomes a dot-dot-dash line.

NOTE: *If you encircle an area and cross over the original recorded line, the excess points will be discarded.*

RAPH23PLM0125AA 29

When the recording of a landmark area is stopped, if the line has not been completed or if there are gaps from the start point to the last recorded point, the first and last recorded point will join in a straight line and complete the area.

When you finish the recording, the dot - dot - dash line will form an enclosed area which will be filled with diagonal stripes.



RAPH23PLM0126AA 30

Manage landmarks

A recorded landmark can be modified in the “Landmarks” menu and selecting the “Manage” tab.

NOTE: *When autoguidance in engaged, it is not possible to access the “Landmarks” menu. The “Landmarks” button will appear in a disabled state. To open the “Landmarks” menu panel, the autoguidance must be disengaged.*

NOTE: *If the vehicle has dual displays, opening the “Manage” tab in a display disables the “Landmarks” icon on the other display.*

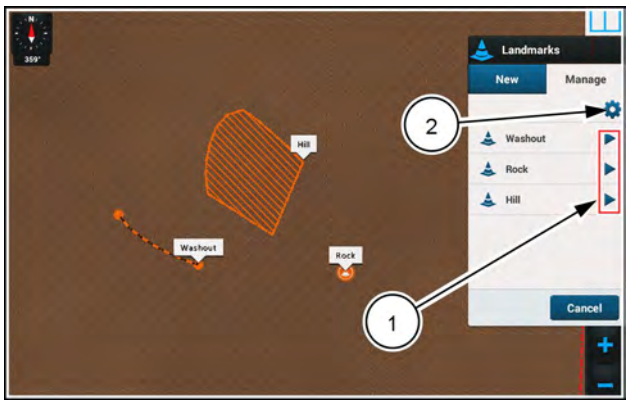
When the “Landmarks ” menu is opened and “Manage” tab selected, all of the available landmarks for the current field will be listed in the order of creation within the menu. If numerous landmarks are available for a single field, a scroll bar will momentarily appear in the landmark list. Additionally the map will zoom out to show all the landmarks in the current field.

RAPH23PLM0132AA 31

All landmark annotations will show for the selected field and remain until you exit the “Landmarks” menu panel “Manage” tab or selects a landmark to edit by selecting the arrow **(1)** to the right of the landmark on the menu.

NOTE: *All swaths and boundaries will show on the zoomed out map for the current field but will not show annotations and cannot be selected or edited.*

You can change the “Landmark Warning Time”. This is done by selecting the advanced settings gear icon **(2)** in the top right corner of the “Landmarks” menu window. The “Global Settings” window will appear.



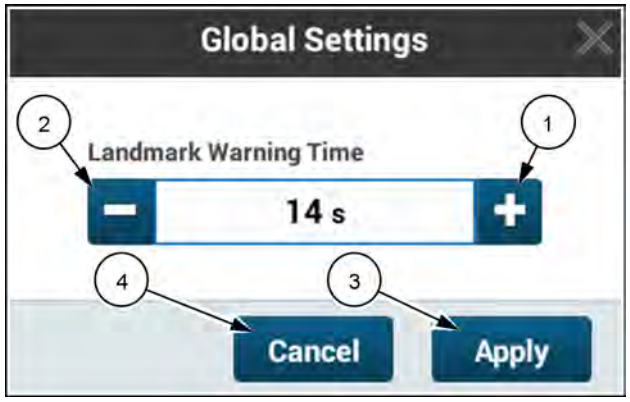
RAPH23PLM0132AA 32

The “Global Settings” window is used to warn you of the time to the landmark.

To modify the “Landmark Warning Time”, select:

To increase the warning time to the landmark **(1)**.

To decrease the warning time to the landmark **(2)**.



RAIL18PLM1800AA 33

NOTE: *The default time setting is **5 s**.*

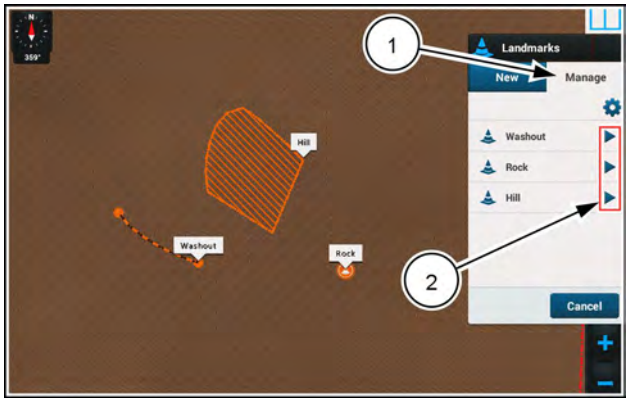
When the desired warning time has been selected, press the “Apply” button **(3)** on the “Global Settings” window and the setting will be saved for the selected landmark. The “Global Settings” window will disappear.

NOTE: *The “Apply” button is disabled if you have not changed the time.*

To cancel the “Landmark Warning Time”, press the “Cancel” button **(4)** and the selection will be cancelled and the “Global Settings” window will disappear.

Renaming landmarks

Selecting the “Manage” tab **(1)** within the “Landmarks” menu panel, you can select a landmark to rename. To rename a landmark, press the arrow to the right of the landmark **(2)**.



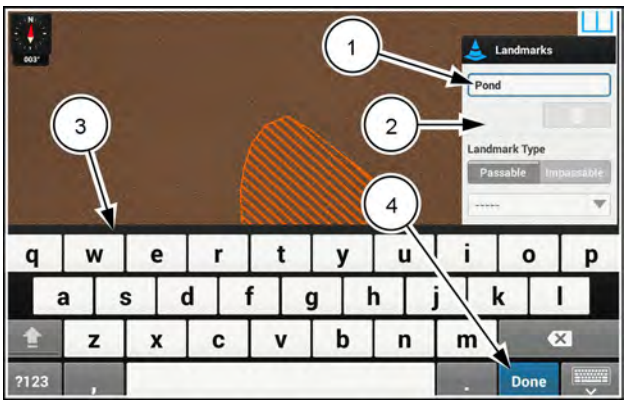
RAPH23PLM0132AA 34

Press the name field **(1)**.

The “Landmarks” menu **(2)** will change with the selected landmark. A keyboard **(3)** will appear on the bottom half of the display. The cursor will be located at the end of the landmark name. Or, press on the box with the name of the landmark to be renamed, the cursor will appear in the box to indicate that the name is ready to be changed.

Use the keyboard to change the name of the landmark. After the landmark name is changed, select the “Done” key **(4)** on the keyboard.

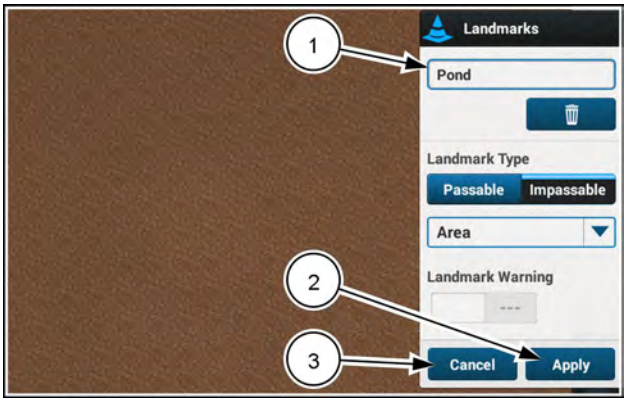
NOTE: *The “Apply” button will appear in an inactive state if no change was made to an individual landmark.*



RAPH23PLM0127AA 35

When “Done” is pressed on the keyboard after the name change, the keyboard will disappear. The “Landmarks” menu panel will remain with the new name in the landmark name box **(1)**. If the new name change is acceptable, press the “Apply” button **(2)**. The name of the landmark will be saved.

If you wish to cancel the rename without saving, press the “Cancel” button **(3)**.



RAPH23PLM0128AA 36

If the “Cancel” button is selected, a “Warning” window will appear. There will be two choices. The choices are:

Select the “Yes” button **(1)** to confirm cancelling.

Select the “No” button **(2)** to return to the “Landmarks” menu panel.

RAIL18PLM1802AA 37

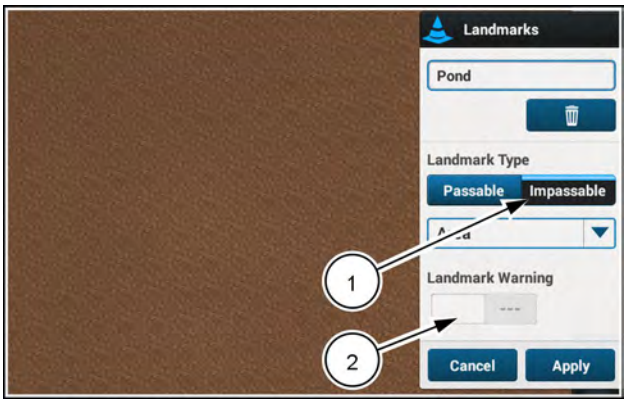
NOTE: *The “Apply” button in the “Landmarks” menu panel will appear in an inactive state if no change was made to the selected landmark.*

Landmark type

The type of the individual landmark can be changed between passable and impassable. Changing the landmark type from passable and impassable is accomplished by selecting the “Passable” and “Impassable” toggle buttons **(1)** on the landmarks pop up for the individual selected landmark.

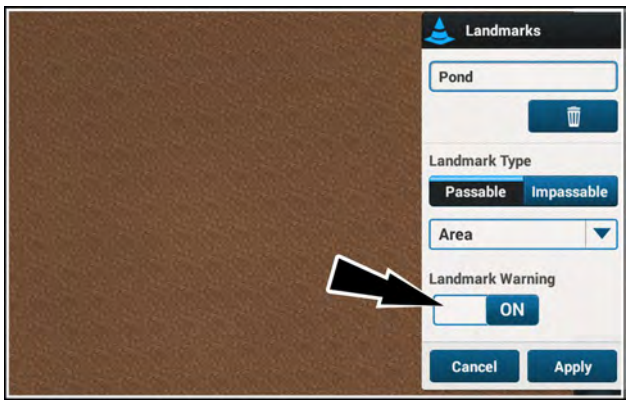
If a landmark is impassable (default), an alarm will always be ON.

If a landmark is impassable, the “Landmark Warning” switch **(2)** is inactive.



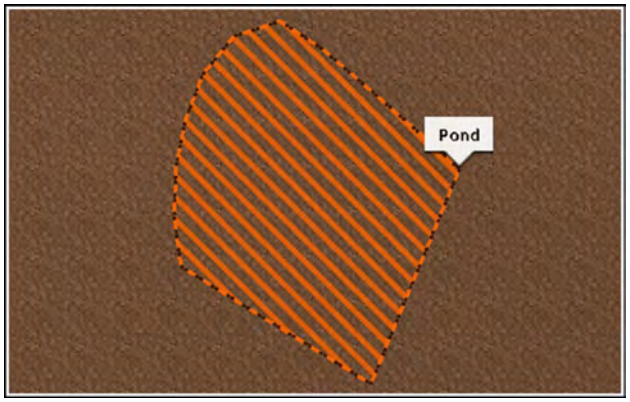
RAPH23PLM0128AA 38

If a landmark is set to “Passable”, then the warning “ON/OFF” switch will be displayed with “ON” being the default.



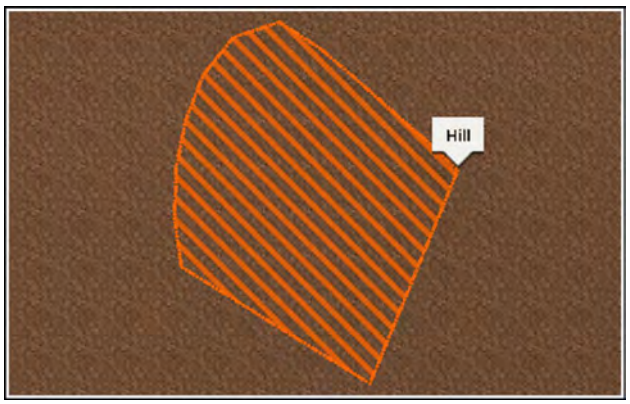
RAPH23PLM0129AA 39

For an impassable landmark, the lines will be orange dash - brown dot - brown dot - orange dash.



RAPH23PLM0130AA 40

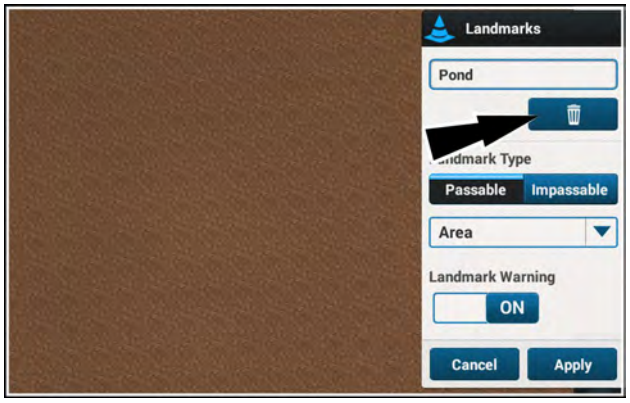
For a passable landmark, the lines will be orange dot - orange dot - orange dash.



RAPH23PLM0131AA 41

Deleting landmarks

Delete the selected landmark by pressing the “Delete” button on the “Edit” menu. A confirmation window appears.



RAPH23PLM0129AA 42

Yes

Select the “Yes” button **(1)** to confirm the deletion.

No

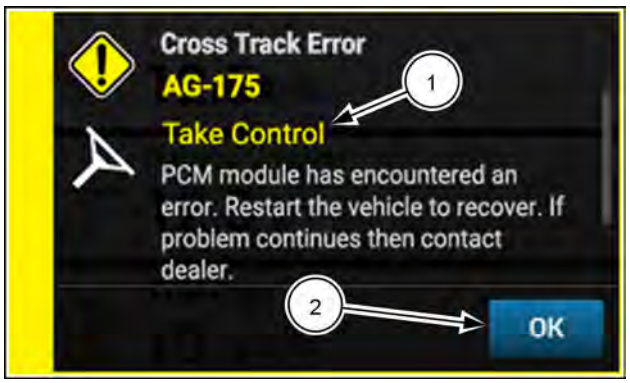
Select the “No” button **(2)** to cancel the deletion.

RAPH23PLM0141AA 43

"Take Control" messages

When a system fault occurs requiring the system to disengage the autoguidance, a fault message appears in the display. The message includes the instruction, “Take Control **(1)**.” It then provides a description of the fault. The fault message also provides the fault code.

Press the “OK” button **(2)** to acknowledge the fault.



RAIL18PLM1627AA 1

If the autoguidance was not engaged at the time the fault occurred, there is no “Take Control” message.

RAIL18PLM1628AA 2

Lightbar guidance driving

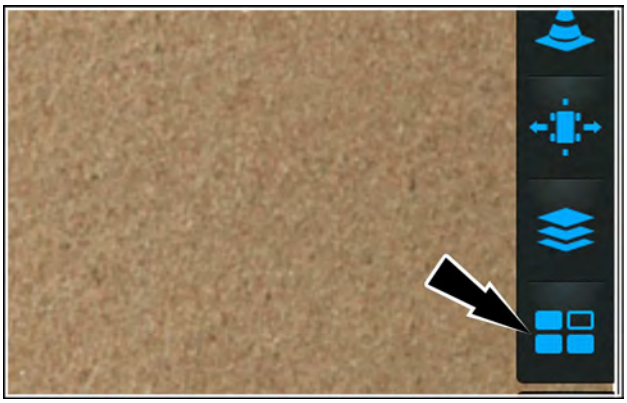
Enable "Lightbar" mode

“Lightbar” mode provides a means of using guidance lines to aid in manually steering the vehicle through a field. There is no requirement to perform autoguidance calibrations or configurations to use “Lightbar” mode.

NOTE: *“Lightbar” mode provides limited guidance functionality during manual vehicle operation.*

Access a 3D Map User-Defined Window (UDW) from a run screen.

On the right-hand menu, press the “Widgets” icon.

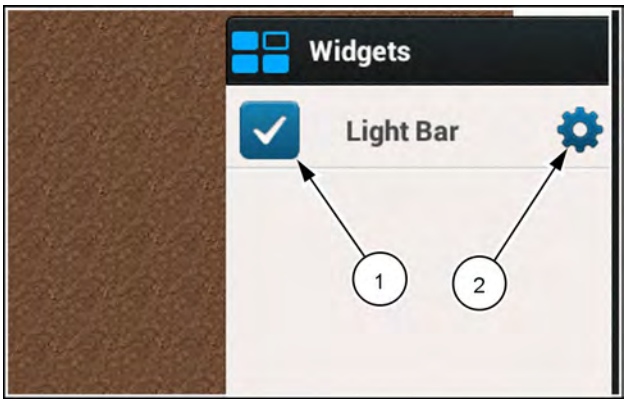


NHIL20PLM0049AA 1

The “Widgets” menu appears.

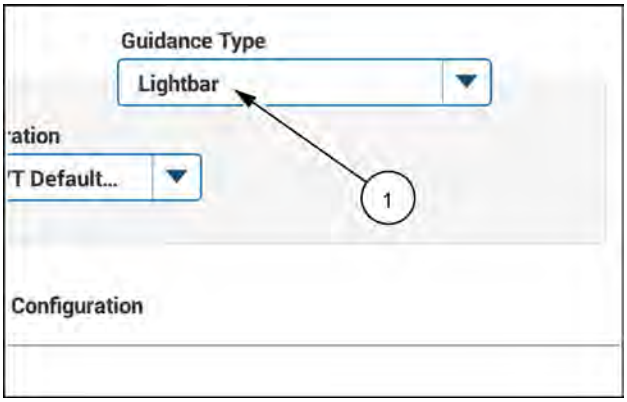
Press the check box **(1)** to select “Lightbar.”

Press the “Gear” icon **(2)** to access the lightbar setup options.



NHIL20PLM0085AA 2

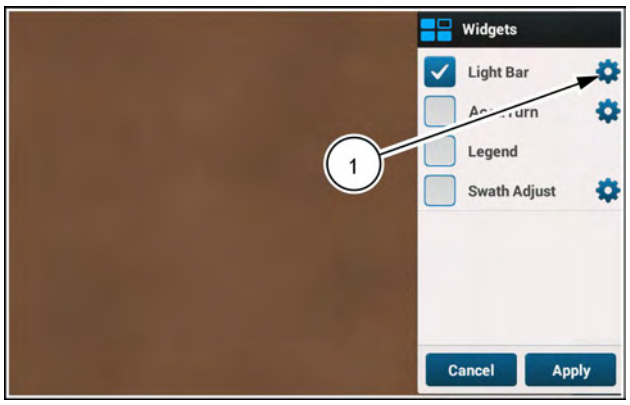
Navigate to the ”Guidance” screen on the “GNSS & Guidance” card. From the “Guidance Type” drop-down menu, select “Lightbar” **(1)**.



NHIL20PLM0205AA 3

"Lightbar" mode setup

Press the “gear” button **(1)** from the map widgets window to access the “Lightbar Setup” page.

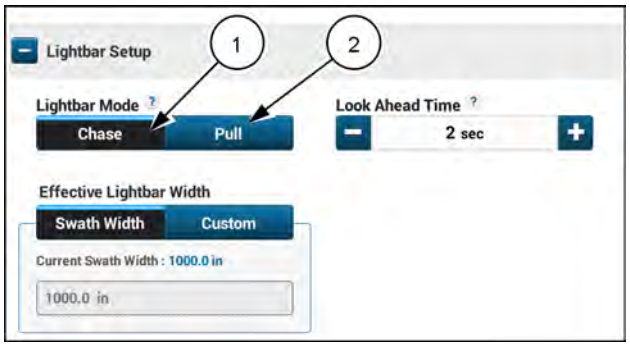


RAPH23PLM0145AA 1

Select your swath finder mode.

Press the “Pull” button **(1)** to select “Pull” as the swath finder mode. When “Pull” is selected as the swath finder mode, The swath symbol remains in the center of the lightbar and the arrows pull toward the direction that correction is needed.

Press the “Chase” button **(2)** to select “Chase” mode. When “Chase” is selected as the swath finder mode, the arrows chase the direction that correction is needed.



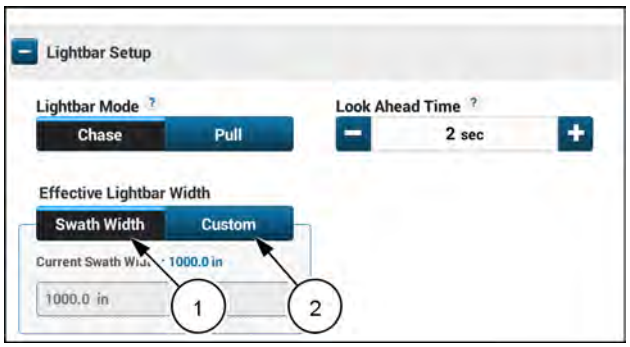
RAPH23PLM0148AA 2

Effective Lightbar Width

Select the option that the system will use to determine your effective width while operating in “Lightbar” mode.

The default setting is “Swath Width” **(1)**, which will inherit the swath width set for the implement on the “Measurements” screen. To change the implement swath width, see “Applicator measurements” (**4-67**).

If you wish to change the effective width while operating in “Lightbar” mode, press the “Custom” button **(2)**. The swath width field activates, and adjustment buttons appear.

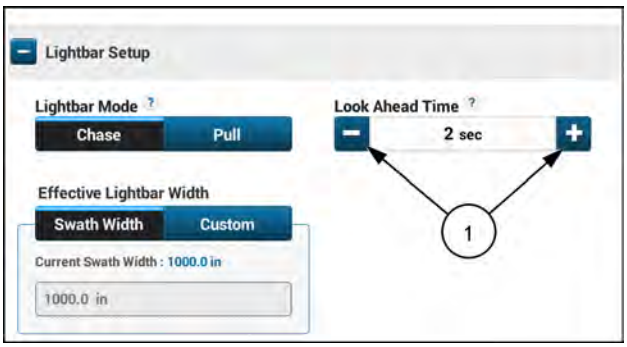


RAPH23PLM0148AA 3

Look Ahead Time

The “Look Ahead Time” configuration gives an operator time to react when cross track error develops while driving manually on a swath. This makes driving using the lightbar easier, but causes less conformity with the swath lines.

The “Look Ahead Time” configuration causes the lightbar to display predicted cross track error rather than actual cross track error. This can cause differences between the lightbar distance and the actual cross track error. The software looks at the projected cross track error, taking into account the look ahead time, swath pattern, and vehicle speed.



RAPH23PLM0148AA 4

Press the buttons **(1)** to change the look ahead time.

"Lightbar" mode operation

The “Lightbar” mode **(1)** provides a simulated lightbar that appears at the top of the map.

NOTE: *You must select a swath to use the lightbar mode. If there is no activated swath, the lightbar contains the statement, “No Swath.”*

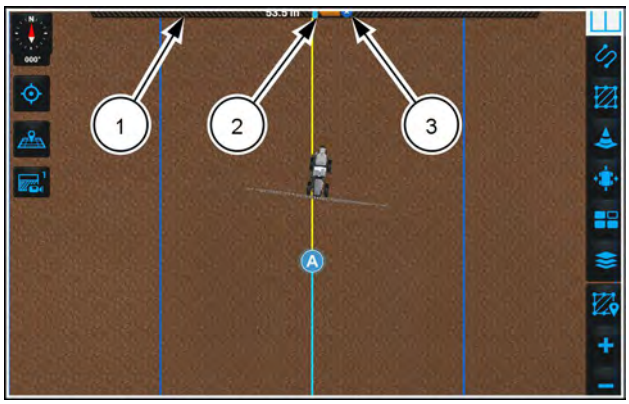
The lightbar contains three indicators:

- The vertical line **(2)** represents the swath.
- The pointer symbol **(3)** represents the position of the vehicle relative to the swath.

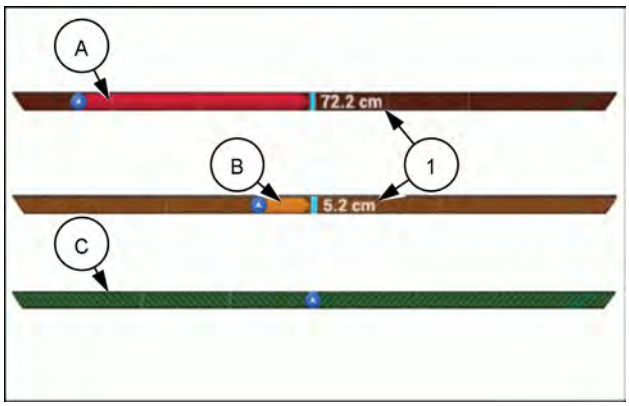
The colored arrow grows proportionally with the amount of correction that is required to align with the target swath. The arrow direction is the direction that the steering wheel must be turned to stay aligned to the swath.

A red arrow **(A)** indicates that a large amount of correction is required. An amber arrow **(B)** indicates that a slight amount of correction is required. A green arrow **(C)** or if the pointer symbol is centered on the lightbar indicates that the vehicle is aligned with the swath.

There is also an annotation **(1)** that gives the deviation distance. If the vehicle is converged on the swath, the annotation no longer appears.



RAPH23PLM0142AA 1



RAIL18PLM0136AA 2

AFS AccuTurn: Automatic end of row turns

Introduction: AFS AccuTurn

The AFS AccuTurn automatic end of row turning feature improves machine efficiency by automatically plotting the best turn path to minimize “out of work” time during the turn.

With autoguidance engaged, the vehicle transitions smoothly from the active swath to the turn path, and then from the turn path to the next swath.

Interaction with the AFS AccuTurn feature is performed from either the 3D map or the AFS AccuTurn window on a run screen. The map widget and the run screen window have the same functionality and controls.

You can use the AFS AccuTurn feature with any vehicle that uses **AFS AccuGuide™** hydraulic steering. Contact your CASE IH dealer to activate the AFS AccuTurn feature on your display.

You can use the AccuTurn feature with the following swath types:

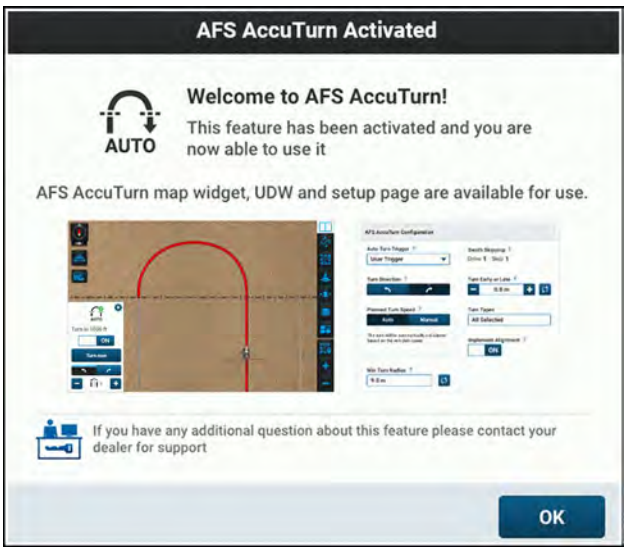
- Straight swath
- Heading swath
- Curve swath
- Field swath (using one of the above swath types for the interior of the field swath)

Activating the AFS AccuTurn feature

The AFS AccuTurn feature must be activated before first use. Activate the AFS AccuTurn feature by inserting your activation code on the “Activations” screen. Alternatively, use a USB memory device to activate the feature. See your CASE IH dealer for the AFS AccuTurn activation code.

Upon successful activation, the “AFS AccuTurn Activated” pop-up window appears.

Press the “OK” button to close the window.



RAPH23PLM1196BA 1

AFS AccuTurn status icons

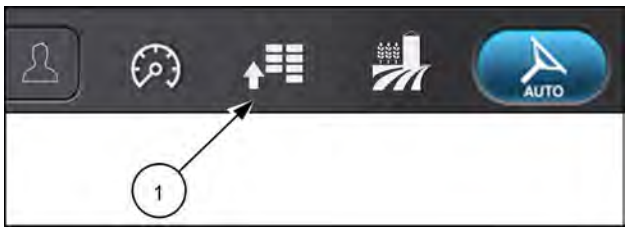
The following icons appear in the display to indicate the status of the AFS AccuTurn feature:

Icon	Description
	Generic icon that appears within the tabs, notifications, or other locations. It does not indicate a status.
	The AccuTurn feature is turned OFF, but is available. The arrows represent the selected turn direction.
	The AccuTurn feature is turned ON and set up correctly. The arrows represent the selected turn direction.
	The AccuTurn feature is turned on, but some recommended settings are not adjusted. The vehicle will still automatically turn onto the next selected swath. The arrows represent the selected turn direction.
	The AccuTurn feature is blocked. The arrows represent the selected turn direction.
	The swath skipping function is available. The operator can choose to skip zero, one, or more swaths. The arrow is dynamic and switches the direction based on the direction of the turn.

AFS AccuTurn setup

***NOTE:** The AFS AccuTurn feature is unavailable unless **AFS AccuGuide™** autoguidance is unlocked.*

To access the AFS AccuTurn setup options, press the button **(1)** on the top bar to navigate to the “Menu” screen. Press the “Settings” tab, if necessary.



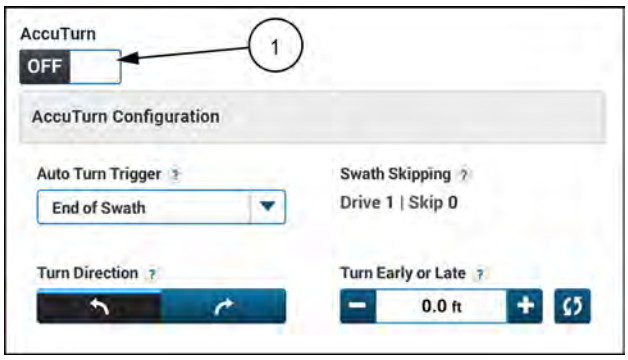
RAIL19PLM0121AA 1

Press the “GNSS and Guidance” card.

NHPH22PLM0543AA 2

Press the ”AFS AccuTurn” tab.

Press the button **(1)** to turn the AFS AccuTurn feature ON or OFF.



RAPH23PLM0174AA 3

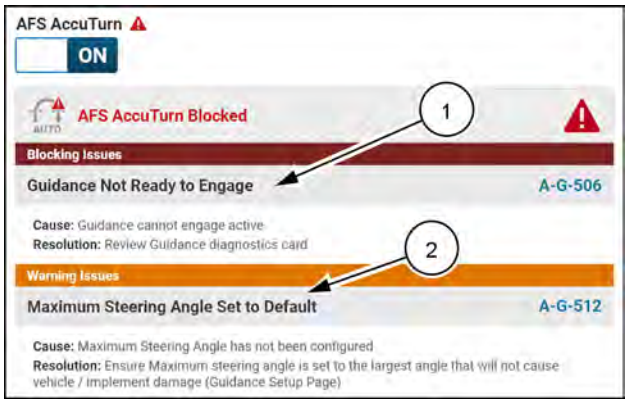
The status section displays information about issues affecting the operation of the AFS AccuTurn feature. These statuses also appear in the display as popups and in the status and notification area.

The AFS AccuTurn status section provides notifications on the following states:

- “Blocking Issues”
- “Warning Issues”

Blocking issues **(1)** disable the AFS AccuTurn feature until the situation is removed or corrected. A blocking issue can be a detected fault in the system. A blocking issue can also be a condition such as another active feature that is not compatible with the AFS AccuTurn feature, or the setup is incomplete.

Warning issues **(1)** are any issues that potentially compromise AFS AccuTurn performance, but pose no immediate safety risk.



NHIL20PLM0633AA 4

AFS AccuTurn setup options

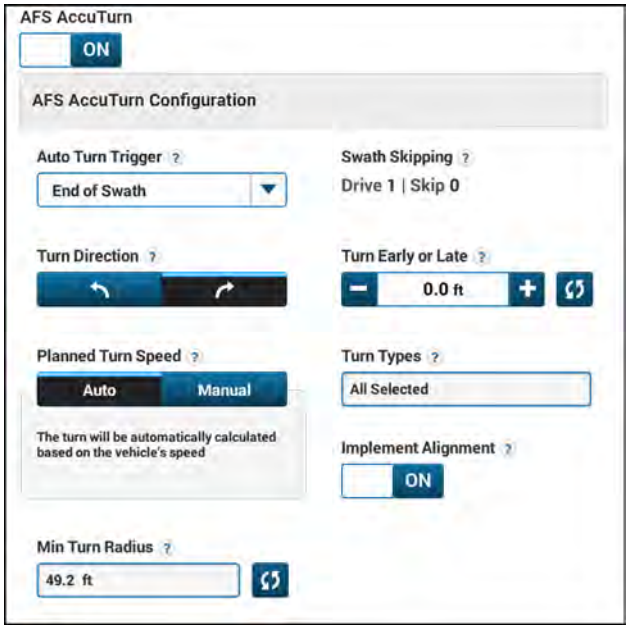
The system saves all AFS AccuTurn setup parameters to the current guidance configuration, and retains the settings through power cycles.

All AFS AccuTurn setup parameters are read only during AFS AccuTurn turns.

From the AFS AccuTurn setup screen, the following settings are available:

- Auto turn trigger
- Swath skipping
- Turn direction
- Turn early or late
- Planned turn speed
- Turn type
- Implement alignment
- Minimum turn radius

NOTE: *This image is for illustrative purposes only. Scroll your display to see all the contents of this screen.*

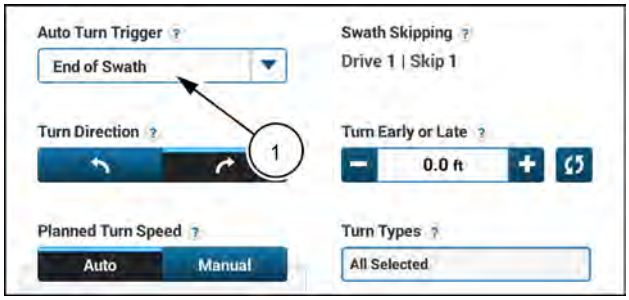


RAPH23PLM1005BA 5

"Auto Turn Trigger"

The auto turn trigger **(1)** is a configurable field location that signals the start of an AFS AccuTurn event. You generally configure triggers as boundary lines. For the trigger to function, the boundary must intersect the active guidance line.

When the vehicle reaches the trigger point with the AFS AccuTurn feature ready and autoguidance engaged, then the trigger initiates the automatic end of row turn.



RAPH23PLM0170AA 6

You can select from the following options:

- Boundary – The boundary trigger uses the boundaries of the field to trigger end of row turns. You can use a headland boundary or an outer field boundary. If a headland boundary is configured and selected in the "Swath" menu, you must deselect it in the "Swath" menu to use the field boundary as the trigger. You do not have to delete a headland boundary to use the field boundary as the trigger.
- End of Swath – Initiate the automatic end of row turn by pressing the "Turn Now" button in the 3D map or AFS AccuTurn window. The end of swath trigger allows you to quickly configure the AFS AccuTurn feature for fields in which you have not yet imported or recorded a field or headland boundary. You can also use the "End of Swath" selection to configure desired triggers even if field or headland boundaries are available for use.

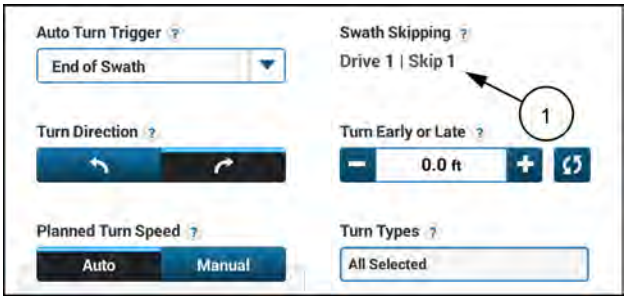
Swath skipping

Swath skipping inhibits autoguidance engagement on skipped swaths that you configure from the “Swath Adjust” menu. The AFS AccuTurn feature calculates automatic turns based on the number of skipped swaths. See “Swath skipping” (**5-125**) for instructions on configuring swath skipping in the swath menu.

The “Swath Skipping” section **(1)** of the AFS AccuTurn setup screen is read-only. It gives the configuration in the “Adjust” menu whether or not the swath skipping feature is turned ON or OFF in the “Adjust” menu.

If the swath skipping feature is OFF in the “Adjust” menu, swath skipping controls activate in the AFS AccuTurn widget. The widget controls configure only the number of swaths to be skipped. The number of swaths to be driven is fixed at one.

NOTE: *If the swath skipping feature is turned ON in the “Adjust” menu, the swath skipping controls in the widget deactivate and the AFS AccuTurn feature conforms to the settings in the “Adjust” menu.*



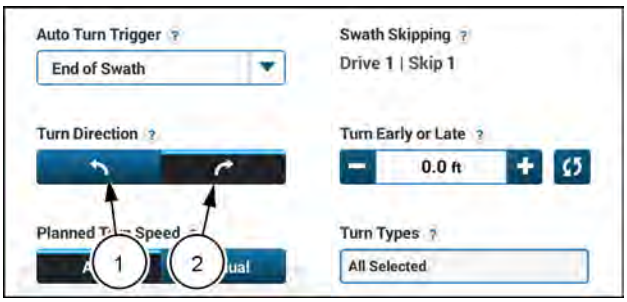
RAPH23PLM0170AA 7

Turn direction

The “Turn Direction” selection sets the direction in which the AFS AccuTurn feature guides the vehicle to the next swath.

Select left turn **(1)** or right turn **(2)** to set the turn direction.

NOTE: *The “Turn Direction” selection also appears in the AFS AccuTurn window and on the 3D map.*



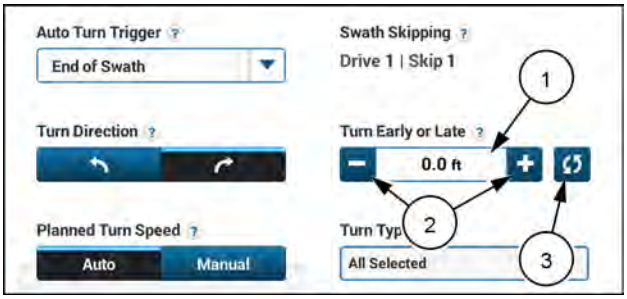
RAPH23PLM0170AA 8

Turn early or late

The turn early or late function allows you to configure the AFS AccuTurn feature to begin the turn at a desired distance before or after the trigger.

A positive value will cause the turn to occur after the trigger, and a negative value will cause the turn to occur before the trigger.

Press and hold the value box **(1)** to set the turn early or late value. Fine tune the adjustment with the plus or minus buttons **(2)**, if necessary. Press the “reset” button **(3)** to set the value back to zero.



RAPH23PLM0170AA 9

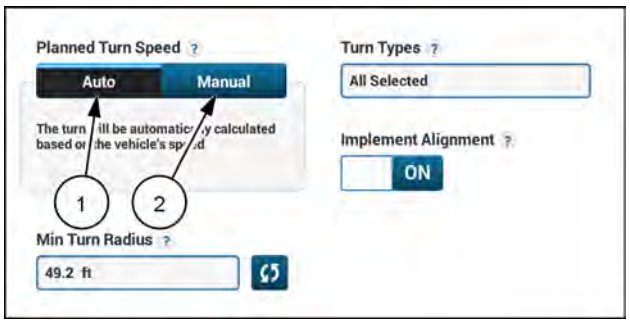
Planned turn speed

The planned turn speed is the automatic or configured speed that the vehicle will use to take an automatic end of row turn.

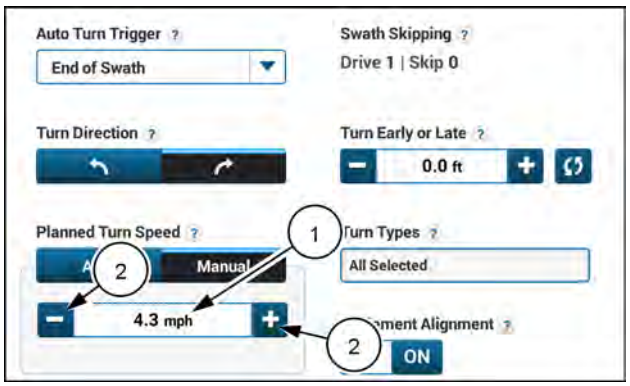
The planned turn speed function has two modes:

- Auto **(1)** – With the planned turn speed configured to the Auto mode, the system calculates the turn speed based upon the current speed of the vehicle. The turn paths displayed on the 3D map will update whenever the vehicle speed changes by **1.0 km/h** (**0.6 mph**).
- Manual **(2)** – With the planned turn speed configured to the Manual mode, you enter the speed manually. The maximum allowable turn speed is **20.0 km/h** (**12.4 mph**). The minimum speed is **0.5 km/h** (**0.3 mph**).

When you set the planned turn speed option to “Manual”, a value box appears beneath the selection. Press and hold the value box **(1)** to set the planned turn speed. Fine tune the adjustment with the plus and minus buttons **(2)**, if necessary.



RAPH23PLM0176AA 10



RAPH23PLM0171AA 11

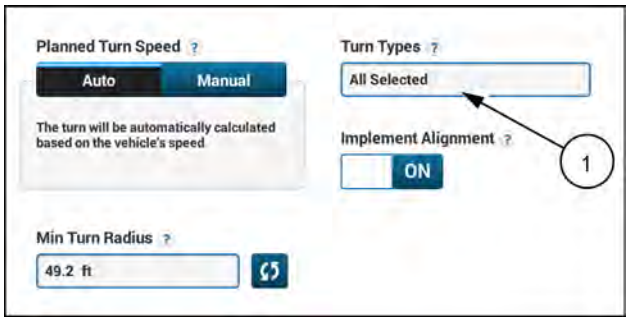
Turn types

The “Turn Types” option provides a selection of all of the possible turns that may be calculated when performing an automatic turn.

Press the options box **(1)** to select the turn types.

The AFS AccuTurn feature provides up to eight different turn types:

- Omega turn
- Direct long turn
- Short in
- Short out
- P-turn in
- P-turn out
- Indirect in
- Indirect out



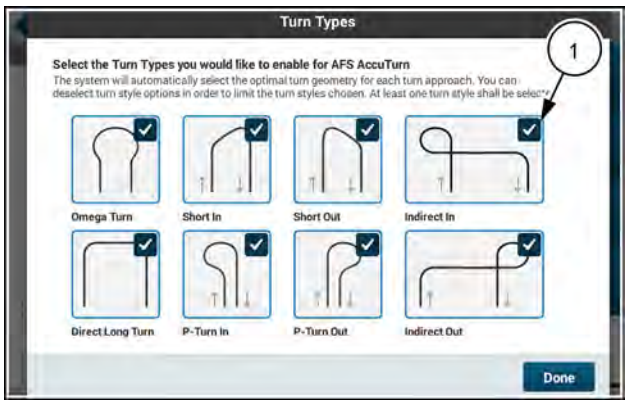
RAPH23PLM0176AA 12

The AFS AccuTurn feature considers two types of turns:

- Fixed – Only one turn type of selected. The system will calculate the same turn type when reaching the trigger (end of swath trigger or boundary trigger) for each swath.
- Dynamic – Multiple turn types selected. The system will determine the best turn type, based on the shape of the field.

Press the check box **(1)** to select the desired turn types.

Press the “Done” button to return to the AFS AccuTurn setup screen.



NHIL20PLM0717AA 13

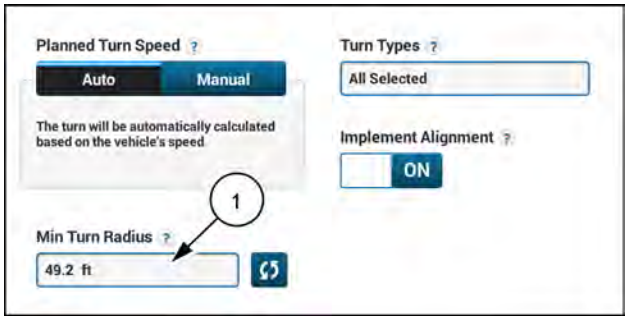
Minimum turn radius

The minimum turn radius is the smallest turn radius allowed during an automatic turn when operating with the AFS AccuTurn feature. The minimum turn radius value that appears is the last value that you configured. The required minimum turn radius for automatic turns may be different based on the maximum steering rate, steering stop position, and maximum applicator dimensions.

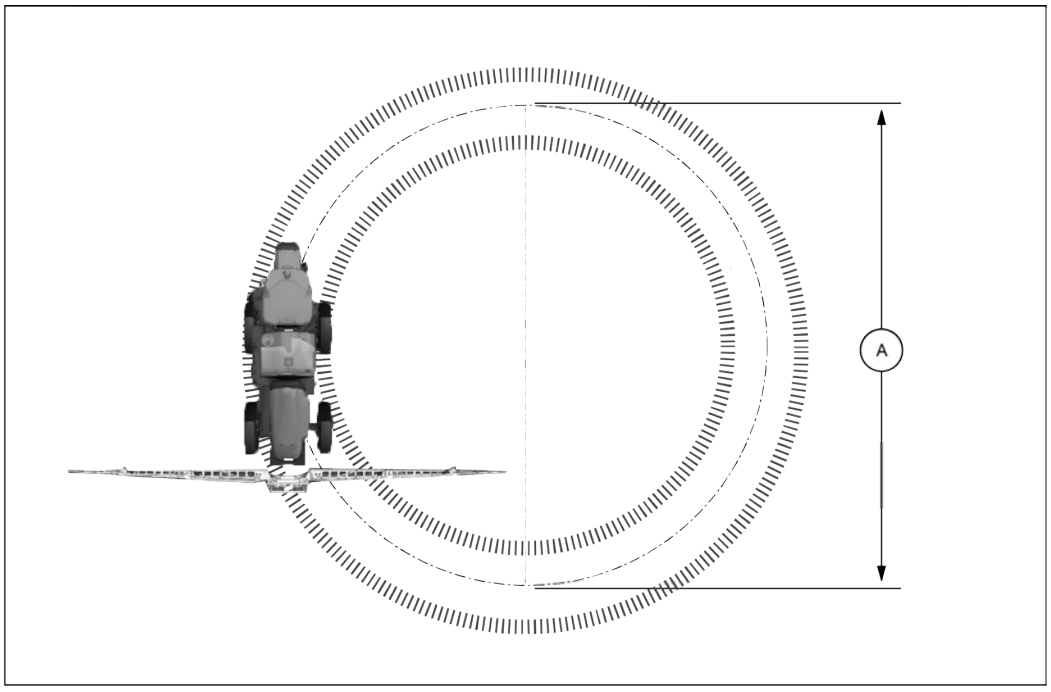
Press the box **(1)** and enter the minimum turn radius value.

If you have never configured the minimum turn radius, the system uses a default value of **15 m** (**49.2 ft**).

NOTE: *The minimum turn radius setting in the AFS AccuTurn feature is not the same setting as the minimum turn radius setting when generating a swath.*



RAPH23PLM0176AA 14



RAIL21PLM2511FA 15

To calculate the minimum turn radius for AFS AccuTurn operation:

1. Manually drive in as tight of a circle as possible with the current sprayer/applicator configuration.
2. Measure the diameter of the turn from the center of the treads **(A)**.

3. Divide this distance **(A)** in half to achieve the minimum turn radius value.
4. Use this calculated value as the “Min Turn Radius” value on the AFS AccuTurn setup screen.

NOTE: *For each applicator setup, you must calculate the minimum turn radius and configure the value in the display before operating with the AFS AccuTurn feature.*

AFS AccuTurn operation

The display provides three user interfaces for operating the AFS AccuTurn feature:

- AFS AccuTurn window on a run screen
- AFS AccuTurn widget on the 3D map
- AFS AccuTurn pop-up window that appears when you have selected a screen other than the 3D map screen.

You can use the AFS AccuTurn feature with the following swath types:

- Straight swath
- Heading swath
- Curve swath

AFS AccuTurn window

When the AFS AccuTurn feature is enabled, you can add the AFS AccuTurn window to a run screen.

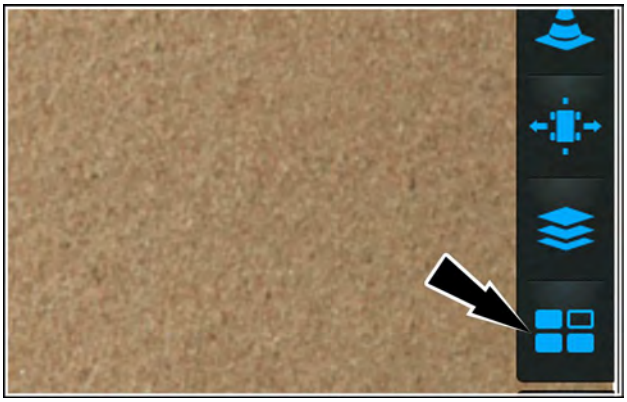
RAPH23PLM0182AA 1

3D map widget

NOTE: *The AFS AccuTurn widget is only available in the 2x6 and 1x6 3D map.*

Access the 3D map window from a run screen.

On the right-hand menu, press the “Widgets” icon.



NHIL20PLM0049AA 2

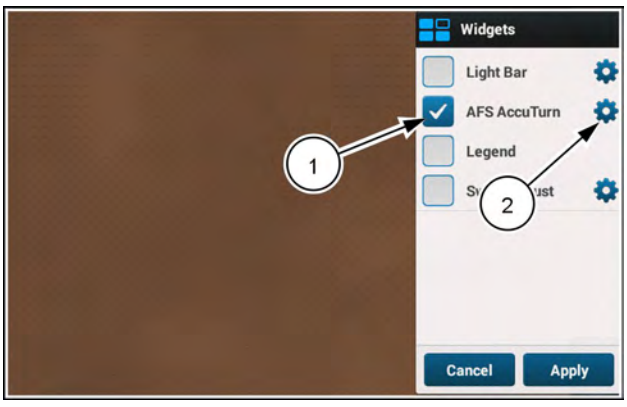
NOTE: *The AFS AccuTurn widget appears automatically in the map the first time after you turn on the automatic turn system.*

The “Widgets” menu appears.

Press the check box **(1)** to select “AFS AccuTurn.”.

Press the gear icon **(2)** to access the AFS AccuTurn setup options.

When the AFS AccuTurn map widget is enabled, the AFS AccuTurn controls appear in the lower left-hand corner.



RAPH23PLM0183AA 3

Controls and indicators

The AFS AccuTurn map widget and the AFS AccuTurn window provide the same functionality. However, you cannot adjust the swath skip setting in the AFS AccuTurn window.

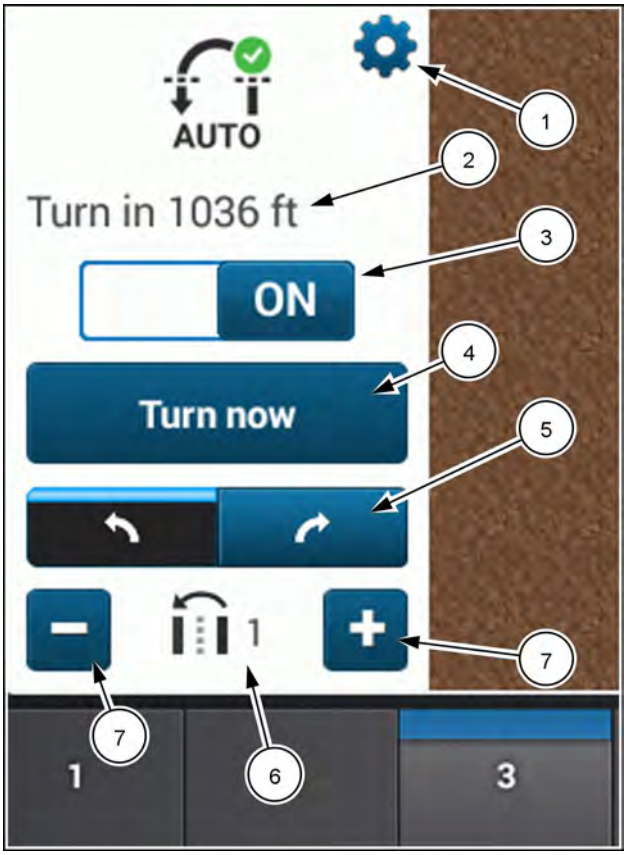
The following controls are available:

- Settings button **(1)** – Go to the AFS AccuTurn setup screen.
- Turn status **(2)** – View the current status of the automatic turn.
- ON/OFF switch **(3)** Turn AFS AccuTurn ON or OFF.
- "Turn Now" button **(4)** – Override the current trigger and initiate an automatic turn at the current location of the vehicle.
- Turn direction switch – Left or Right **(5)** – Change the direction of the automatic turn.
- Swath skip status **(6)** – View how many swaths the automatic turn will skip.
- Swath skip adjust **(7)** – Change the number of swaths to be skipped.

NOTE: *Changing the amount of swaths skipped while autoguidance is engaged is only available in this map widget when "Swath Skipping" is turned off in the "Adjust" menu. For more information see "Swath skipping" (**5-125**).*

NOTE: *Swath skipping is not available in the AFS AccuTurn UDW.*

AFS AccuTurn map widget



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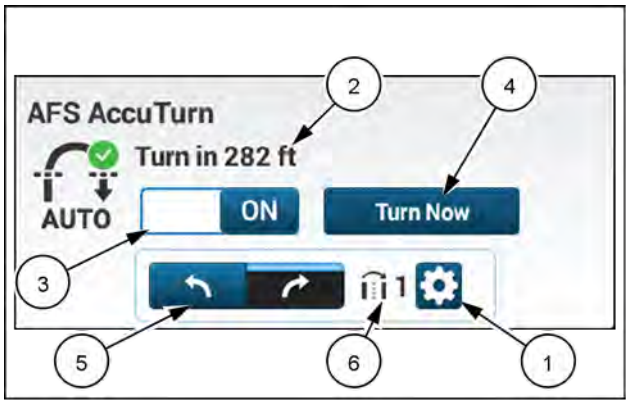
AFS AccuTurn window



RAPH23PLM0185AA 5

AFS AccuTurn status messages

The following status messages may be displayed while operating with AFS AccuTurn to alert the operator of the readiness of the system.

Icon	Status	Description
	Turn in [distance]	The AFS AccuTurn feature is operating correctly.
	Turning...	
	Calculating...	
	Turn in [distance]	Recommended settings have not been adjusted, but the turn is still planned.
	No Trigger	The selected auto turn trigger is not available for the current field.
	Not Engaged	Autoguidance is not engaged.
	Turns blocked.	Automatic turning is blocked. Press the gear icon to access the AFS AccuTurn setup options and determine the cause of the issue.

The following tables describe common scenarios and resolutions when experiencing a blocking or warning status with AFS AccuTurn.

“Turns blocked” status	Resolution
Guidance turned off	Turn guidance on from the ”Guidance” tab of the GNSS” setup screen.
Wrong guidance type selected	Select the AFS AccuGuide guidance type.
Guidance not ready to engage	Review the “GNSS & Guidance” diagnostics page to determine why guidance cannot engage.
Unsupported swath selected	Select a straight, heading, or curve swath.
Swath does not intersect trigger	Select a new swath or change the auto turn trigger.

“Warning” status	Resolution
Verify maximum steering angle	The vehicle and applicator measurements have changed. Make sure that the maximum steering angle is set to the largest angle that will not cause damage. Configure the maximum steering angle on the “Guidance” tab of the “GNSS” setup screen.
No boundary selected when using Boundary Trigger	Record or select a field boundary.
Maximum Steering Angle set to default	The maximum steering angle has not yet been configured. Make sure that the maximum steering angle is set to the largest angle that will not cause damage. Configure the maximum steering angle on the “Guidance” tab of the “GNSS” setup screen.
Not Engaged	You must engage on a swath to initiate automatic turn actions. Engage on a swath that intersects the desired trigger.
No End of Swath trigger when using End of Swath	There is no End of Swath trigger active. Create the End of Swath trigger by using the “Turn Now” button.
Planned Turn will Exceed Outer Boundary	The vehicle speed is too high, or the minimum turning radius is too large. Slow down or enlarge the headland area.

AFS AccuTurn operation

When the AFS AccuTurn feature is turned ON and ready, the projected turn **(1)** appears on the 3D map in the direction set from the AFS AccuTurn map widget or AFS AccuTurn window.

The AFS AccuTurn map widget or AFS AccuTurn window displays the distance **(2)** until the automatic turn is performed.

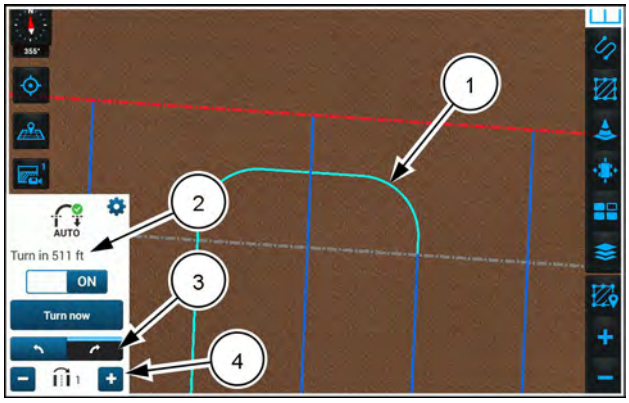
If you wish to adjust the direction in which the automatic turn is performed, press the left or right buttons **(3)**.

If you wish to configure the swath skipping feature, use the plus or minus buttons **(4)**. The plus and minus buttons are inactive if the swath skipping feature in turned ON in the “Adjust” menu.

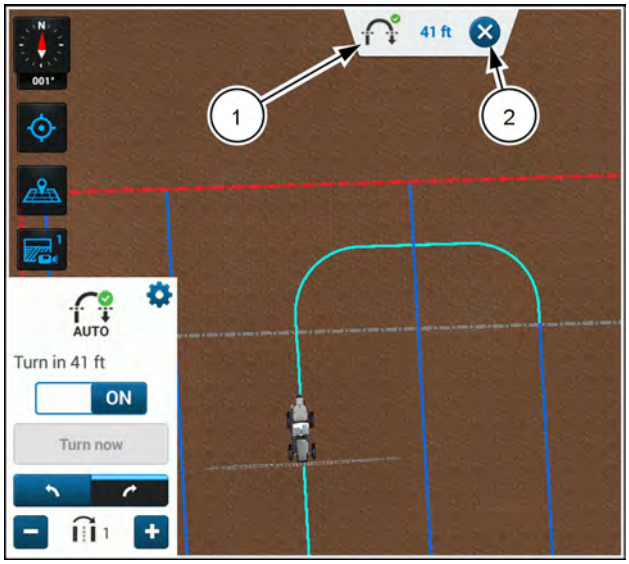
At approximately **10 s** from the headland turn, the control tab **(1)** appears.

Press the “Cancel Turn” button **(2)** to cancel the automatic turn.

NOTE: *Depending upon the progress through an end-of-row turn, some of the controls in the widget become disabled.*



RAPH23PLM0260AA 6



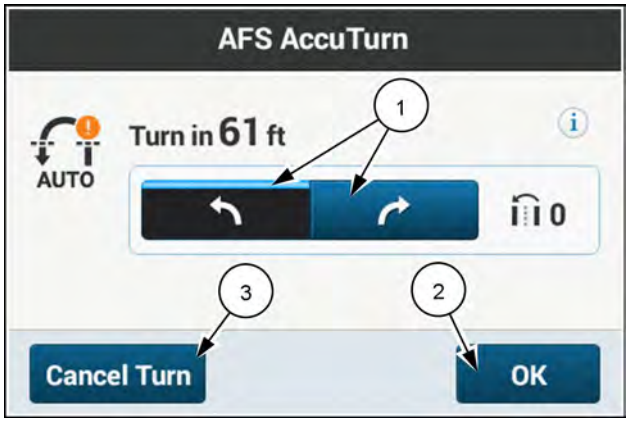
RAPH23PLM1200BA 7

If you are not viewing the map screen during an automatic turn, a pop-up window appears approximately 10 seconds from the automatic turn

Press the left or right arrow buttons **(1)** to change the direction of the automatic turn.

Press the “OK” button **(2)** to acknowledge the turn and close the window.

To cancel the automatic turn, press the “Cancel Turn” button **(3)** on the window.



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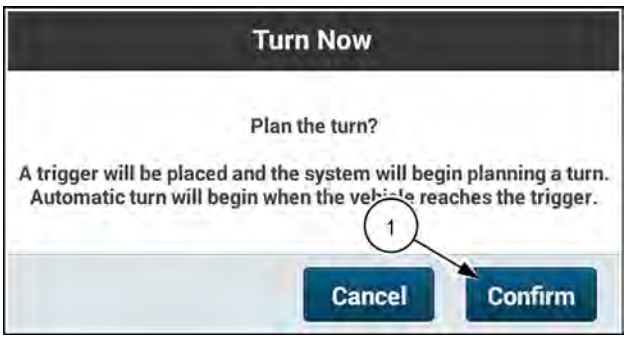
If you wish to initiate an automatic turn at the current location of the vehicle, press the “Turn Now” button.

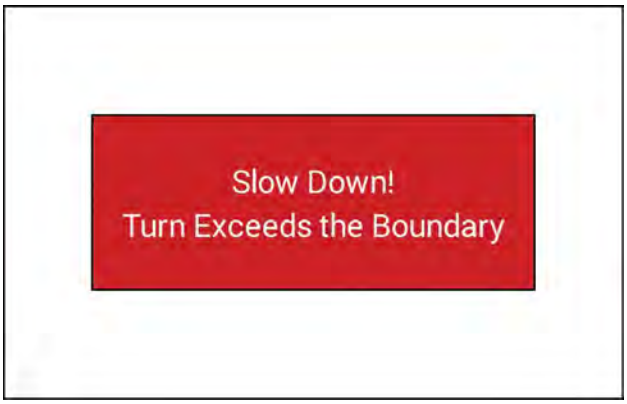
The pop-up window appears. Press the “Confirm” button **(1)** to initiate the automatic turn.

Once you confirm the “Turn Now” pop-up window, the system calculates a turn at the location of the vehicle and then automatically executes the turn.



RAPH23PLM0188AA 9

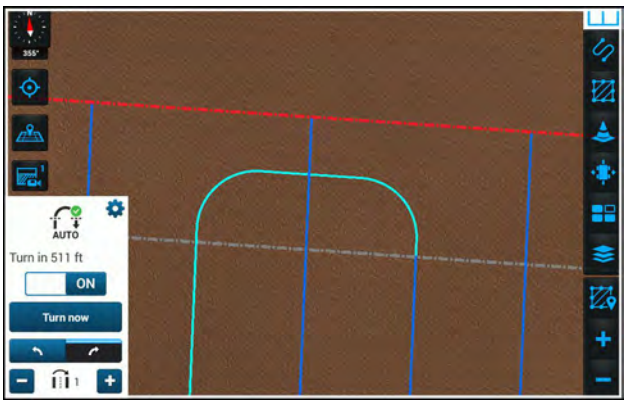
If you are driving too fast for the calculated turn pattern, a warning message appears in the map.



RAPH23PLM0262AA 10

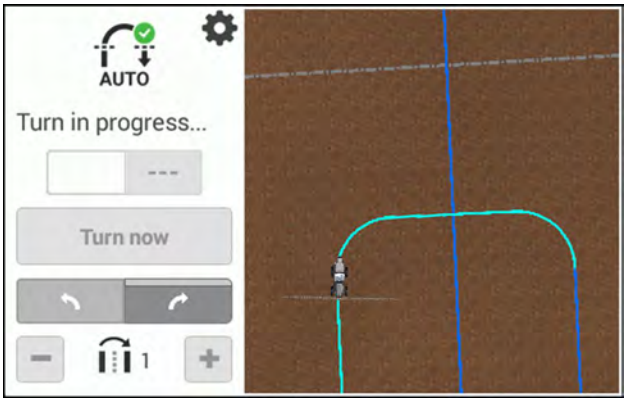
Boundary trigger

Select the “Boundary Trigger” menu item in the “Auto Turn Trigger” menu in the AFS AccuTurn setup menu. The system uses a selected headland or field boundary as the trigger to calculate the turn.



RAPH23PLM0260AA 11

If you press the “Turn now” button in the widget or pop-up window while in boundary trigger mode and then confirm it, the system immediately calculates and executes a turn at the vehicle location. Automatic end of row turns then continue using the previously used field or headland boundaries.



RAPH23PLM0268AA 12

End of swath trigger

An end-of-swath trigger turns the vehicle at the point on the swath that is the current location of the vehicle.

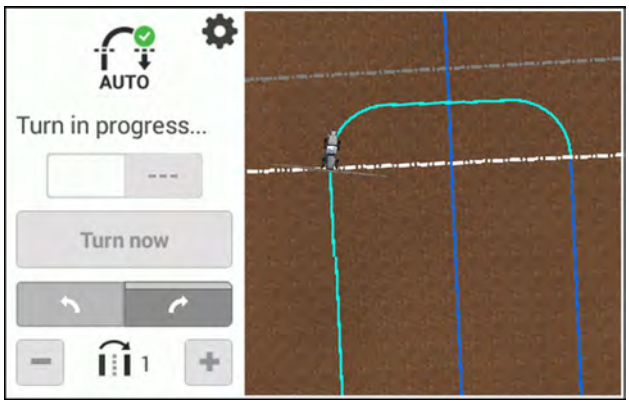
Select the “End of Swath” menu item in the “Auto Turn Trigger” menu in the AFS AccuTurn setup screen. In the widget in the map, press the “Turn now” button. The system immediately calculates and executes a turn at the vehicle location. A new trigger appears as a white line in the map, crossing the swath line at a perpendicular angle. The white line becomes a new end-of-swath trigger. The system continues to use the end-of-swath trigger in subsequent turns. You can create end-of-swath triggers at both sides of the field that intersected by the swath.

The system remembers a calculated end-of-swath trigger for subsequent use after a key ON/OFF cycle. It also remembers an end-of-swath trigger after selecting the “Boundary Trigger” mode and then later selecting the “End of Swath” mode. It also remembers an end-of-swath trigger if you select a new task in the Operations screen.

You cannot delete an end-of-swath trigger except by deleting its swath. When you copy a swath that contains an end-of-swath trigger, the system also copies the end-of-swath trigger.

You can move an end-of-swath trigger closer to the current vehicle location while approaching the end-of-swath trigger while engaged. Press the “Turn now” button in the widget or pop-up window before you reach the current end-of-swath trigger.

If you wish to move a trigger past its current location, turn the AFS AccuTurn feature OFF while leaving the autoguidance system engaged. Drive the vehicle until you reach the desired location past the current end-of-swath trigger. Stop the vehicle if necessary. Turn the AFS AccuTurn feature ON. Press the “Turn now” button at the new desired location.



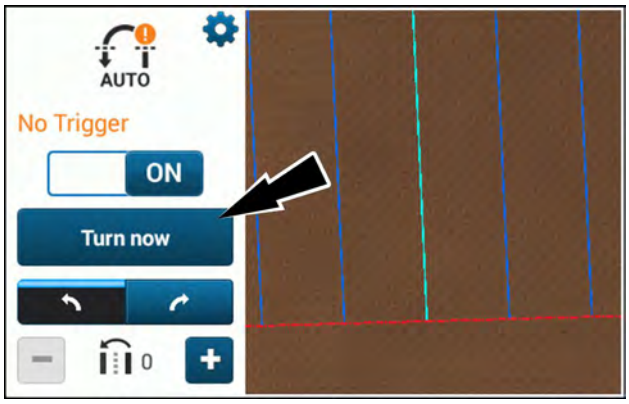
RAPH23PLM0270AA 13

No end of swath

If you select the end-of-swath trigger, you can turn the AFS AccuTurn feature ON while engaged on a swath that has no configured end-of-turn triggers.

Press the “Turn now” button at the desired location on the current swath if you wish to configure an end-of-swath trigger.

NOTE: *The system does not turn the vehicle around if you select the “End of Swath” trigger in the setup screen and have not configured an end-of-swath trigger.*

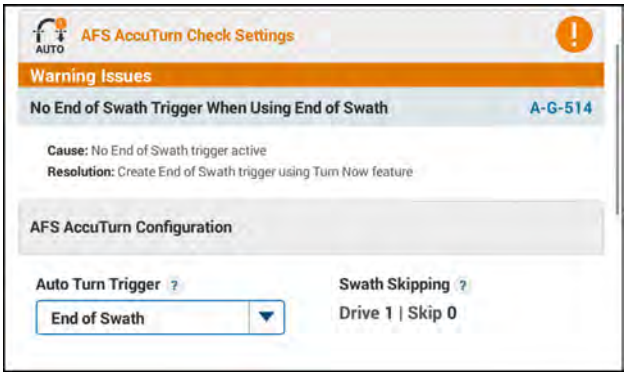


RAPH23PLM0265AA 14

If you engage the autoguidance without an end-of-swath trigger configured in front of the vehicle, the setup screen displays warning A-G-514.

The warning states, “No End of Swath Trigger When Using End of Swath. Cause: No End of Swath trigger active. Resolution: Create End of Swath trigger using Turn Now feature.”

You can press the “Turn now” button in the widget to establish the end-of-swath trigger. This clears the warning.



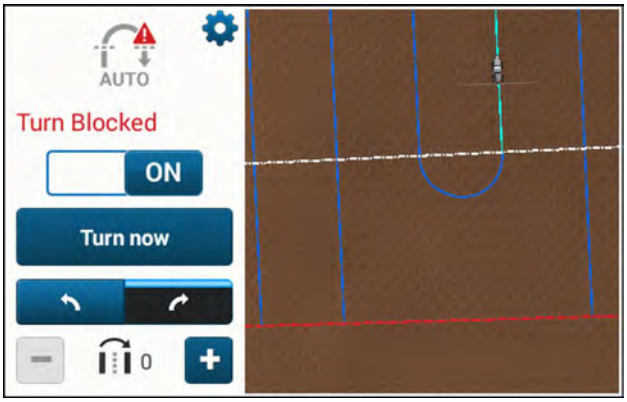
RAPH23PLM0261AA 15

Turn blocked

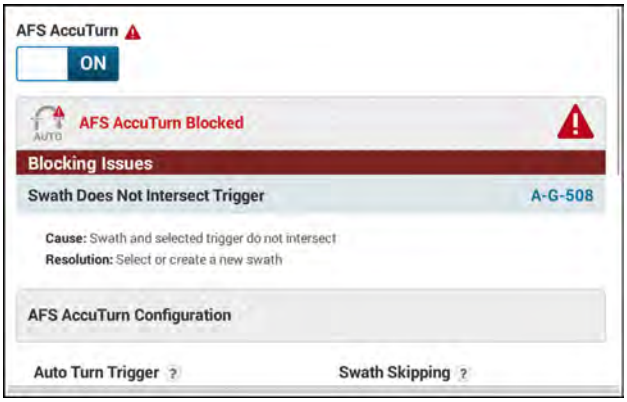
You can configure a single trigger for a swath. However if the vehicle is moving away from the single end-of-swath trigger while engaged, the widget states, “Turn Blocked.” The setup screen shows fault A-G-508.

The resolution in the setup screen states, “Swath does not intersect trigger. Cause: Swath and selected trigger do not intersect. Resolution: Select or create a new swath.”

In this situation you can also create another end-of-swath trigger. Drive while engaged until you reach the desired place on the swath to create another end-of-swath trigger. Press the “Turn now” button in the widget. The system immediately calculates and executes a turn at the vehicle location. A new trigger appears as a white line in the map, crossing the swath line at a perpendicular angle. The white line becomes a new end-of-swath trigger.



RAPH23PLM0266AA 16



RAPH23PLM0272AA 17

Product application: Rate and section control

Product control windows

The product control windows that are available in the layout screens depend on the detected controllers for the applicator.

Rate and target control

NOTE: *Rate control windows can be added to a run screen in 1x2, 2x3, and 2x6 window sizes for liquid controllers. The 1x2 and 2x3 rate control windows do not include virtual tank information.*

The product drive displays the configured target rate **(1)**. Press the plus or minus buttons to adjust the target rate from the run screen. The applied rate **(2)** is shown below the target rate.

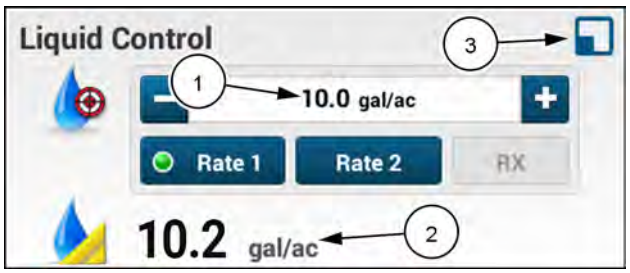
Press the “Rate 1” and “Rate 2” buttons to switch between the pre-configured target rates, or press the “RX” button to assign the prescription rate. If a “Rate 2” value is not pre-configured but you still press the “Rate 2” button, the “Rate 1” value becomes the target. If there is no prescription assigned to the controller, then the “RX” button is inactive.

A green indicator bubble appears on the selected button if the drive has been assigned to that value. If you subsequently change the target rate, the bubble appears half green and half black.

Dashes appear in an applied rate section in the event of a sensor malfunction while the drive is not placed in manual mode.

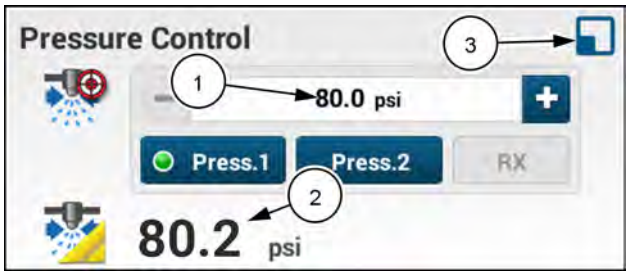
For 1x2 and 2x3 rate control windows, press the button **(3)** to expand the window to the 2x6 size.

Rate control (1x2)



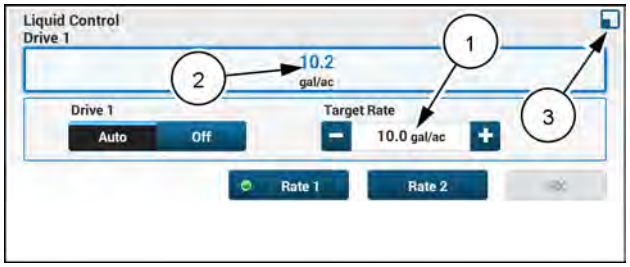
RAPH23PLM0291AA 1

Pressure control (1x2)



RAPH23PLM0288AA 2

Rate control (2x3)



RAPH23PLM0285AA 3

Pressure control (2x3)

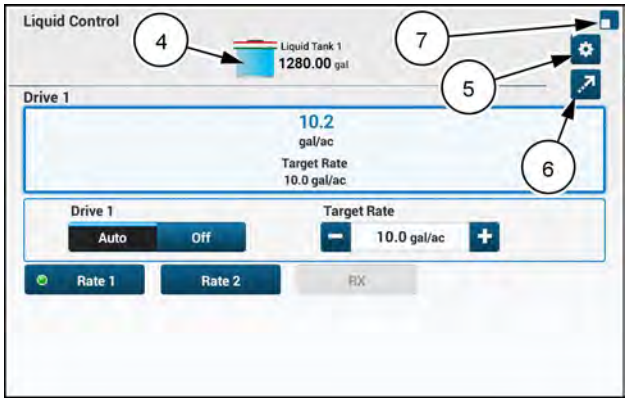
RAPH23PLM0287AA 4

The 2x6 rate control window provides additional functionality:

- The configured virtual tank **(4)** is depicted in the top of the window. The tank has an indication of the remaining product. The settings button **(5)** opens a “Tank Display Settings” window. The “Tank Display Settings” window has controls for configuring the units of measure of remaining product. The virtual tanks button **(6)** opens the “Virtual Tanks” window. See “Virtual tanks” (**5-193**).

Press the button **(7)** to collapse the window back to the original size.

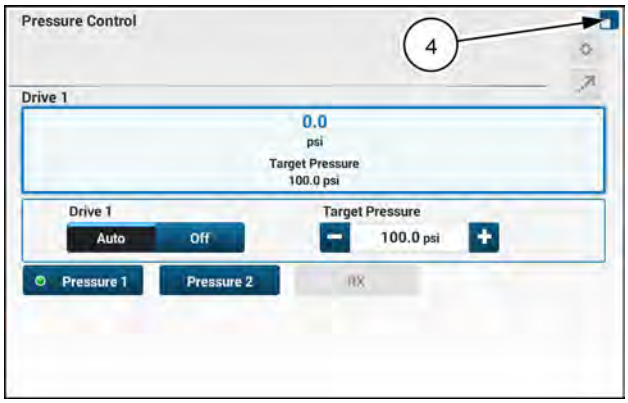
Rate control (2x6)



NHPH24PLM0455AA 5

The 2x6 pressure control window provides the target pressure.

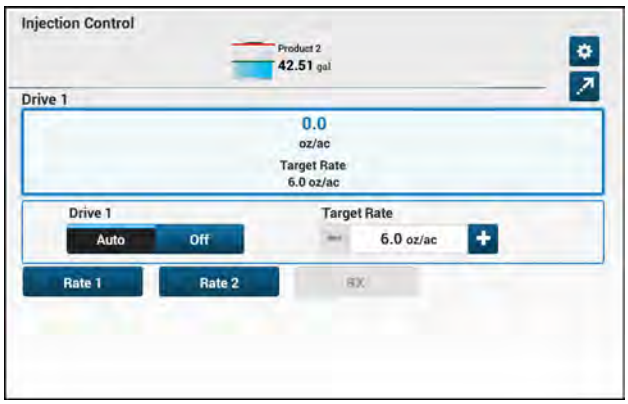
Press the button **(4)** to collapse the window back to the original size.



RAPH23PLM0333AA 6

Where equipped, injection control is another rate control parameter. The controls are similar to the rate control instruction given above.

RAPH23PLM0335AA 7

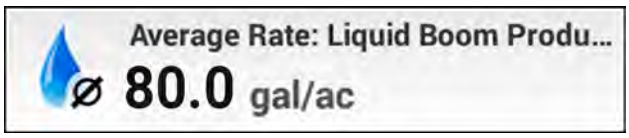


RAPH23PLM0334AA 8

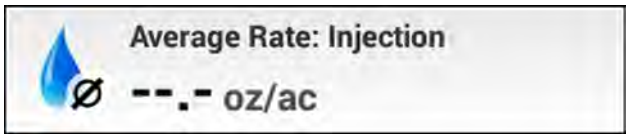
Average rate

Location: Run screen, Left-Hand Area
Label: “Average Rate, Product X”

The “Average Rate” window shows the average rate of the product that is being applied.



RAPH21PLM1380AA 9



RAPH23PLM0339AA 10

Injection

Location: Run screen, Left-Hand Area
Label: “Liquid Boom (Product)”

The “Liquid Boom (Product)” window shows the total area covered by the controller that is applying the product. Multiple applications are included in the figure.

This data is automatically saved to the current task, and reset with a new task.

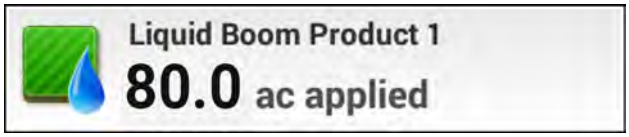
RAPH23PLM0336AA 11

Liquid boom area applied

Location: Run screen, Left-Hand Area
Label: “Liquid Boom (Product)”

The “Liquid Boom (Product)” window shows the total area covered by the controller that is applying the product. Multiple applications are included in the figure.

This data is automatically saved to the current task, and reset with a new task.



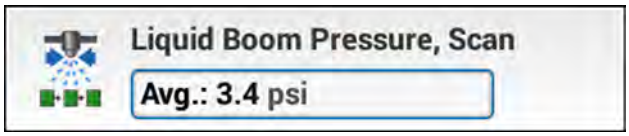
RAPH21PLM1378AA 12

Liquid boom pressure, scan

Location: Run screen, Left-Hand Area
Layout menu: Precision Farming
Label: “Liquid Boom Pressure, Scan”

The “Liquid Boom Pressure, Scan” window shows the pressure being applied by the controller that is applying the pressure commands.

The readout cycles between high, low, and average.



RAPH21PLM1395AA 13

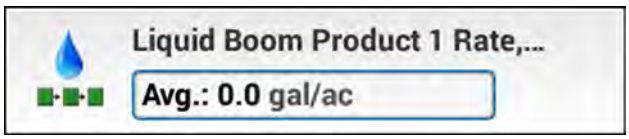
Liquid boom product rate scan

Location: Run screen, Left-Hand Area
Layout menu: Sprayer
Label: “Liquid Boom Product (x), Rate, Scan”

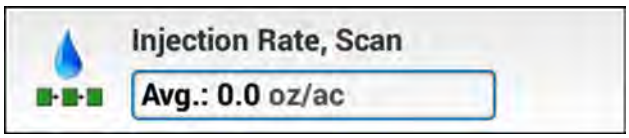
The “Liquid Boom Product (x) Rate, Scan” window shows the rate of product being applied by the controller that is applying the rate commands.

The “Injection Rate, Scan” window where equipped shows the rate of injected product being applied.

The readout cycles between high, low, and average.

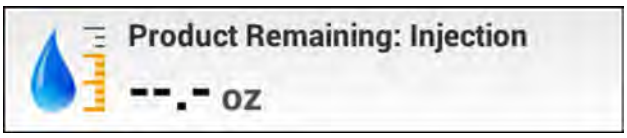


RAPH21PLM1396AA 14



RAPH23PLM0349AA 15

Product Remaining: Injection



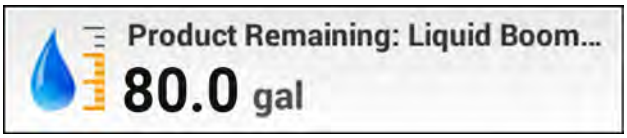
RAPH23PLM0338AA 16

Location: Run screen, Left-Hand Area
Label: “Product Remaining: Injection”

The “Product Remaining: Injection” window shows the estimated remaining liquid product to be injected where product injection is equipped.

This is calculated from the remaining area in the field and the target rate that you configured for the product controller.

Product remaining: liquid boom



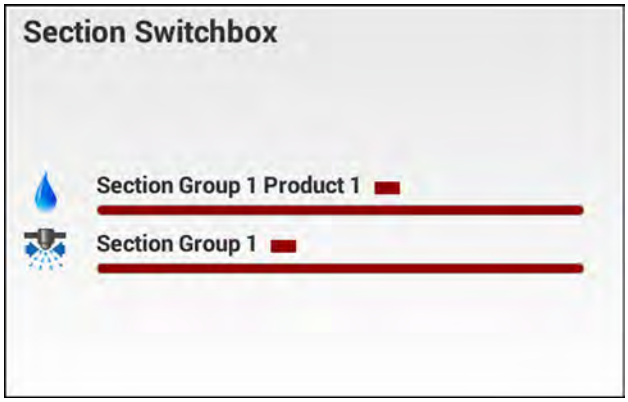
RAPH21PLM1379AA 17

Location: Run screen, Left-Hand Area
Label: “Product Remaining: Liquid Boom”

The “Product Remaining: Liquid Boom” window shows the estimated remaining liquid product to be applied.

This is calculated from the remaining area in the field and the target rate that you configured for the product controller.

Section switchbox



RAPH21PLM1316AA 18

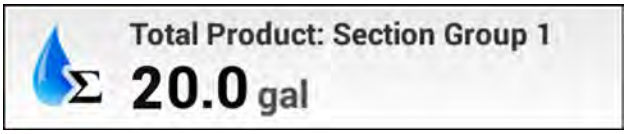
Location: Run screen (1x3)
Label: Section Switchbox

The “Section Switchbox” window is available in the 1x3 size on this vehicle. The 1x3 section switchbox provides only a preview (read-only) of the sections that are configured to the switchbox window for your applicator.

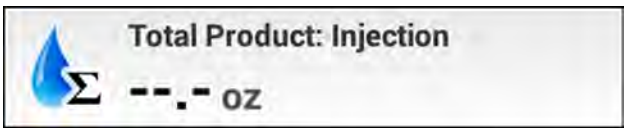
The product controller and pressure controller appear as drives in the “Section Switchbox” window. Injection product control also appears where equipped.

The individual sections are controlled by the mechanical switches below the display.

Total product



RAPH21PLM1143AA 19



RAPH23PLM0337AA 20

Location: Run screen, Left-Hand Area
Label: Total Product: Section Group 1”

The “Total Product: Section Group 1” window shows the total amount of liquid product that was applied.

This is automatically saved to the current task, and reset with a new task.

Windows available with Raven™ ISOBUS software

With **Raven™** ISOBUS software, the windows below are available.

ABM status

Location: Run screen, Left-Hand Area
Label: “ABM Status”

The “AutoBoom Status” window gives the status of the left, center, and right boom sections. The foreground annotations that are blue letters on a white square background give the current status of each boom section.

“A” means the boom section is in automatic mode.

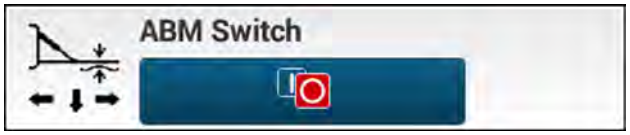
“M” means the boom section is in manual mode.

RAPH21PLM1382AA 21

ABM master switch

Location: Run screen, Left-Hand Area
Label: “ABM Master Switch”

The “ABM Switch” window turns the **AutoBoom®** system ON and OFF.



RAPH23PLM0340AA 22

Target type

Location: Run screen, Left-Hand Area
Label: “Target Type”

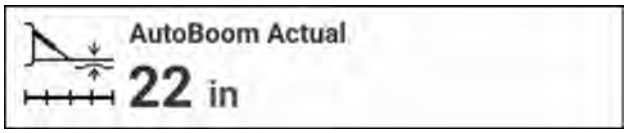
The “Target Type” window indicates if the ground or the canopy is the selected measurement target.

RAPH23PLM0341AA 23

AutoBoom® actual

Location: Run screen, Left-Hand Area
Label: “AutoBoom Actual”

The “AutoBoom Actual” window gives the distance from the target that the **AutoBoom®** system is programmed to maintain. The target is either ground or canopy, as selected by the operator.



RAPH21PLM1183AA 24

AutoBoom® sensitivity

Location: Run screen, Left-Hand Area (1x2)
Label: “AutoBoom Sensitivity”

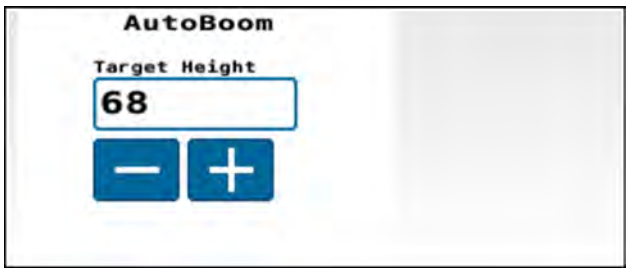
The “AutoBoom Sensitivity” window provides a sensitivity setting of the left, center, and right boom sections.

RAPH21PLM1383AA 25

AutoBoom® target height

Location: Run screen, Left-Hand Area (1x2)
Label: “AutoBoom Target Height”

The “AutoBoom Target Height” window sets the distance from the boom to the target. The target is either ground or canopy, as selected by the operator.



RAPH21PLM1386AA 26

Boom height

RAPH21PLM1387AA 27

Location: Run screen, Left-Hand Area
Label: “Boom Height”

The “Boom Height” window displays the configured distance from the boom to the target. The target is either ground or canopy, as selected by the operator.

Current height

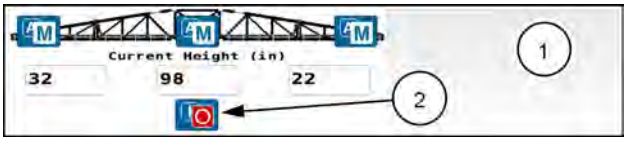
Location: Run screen, Left-Hand Area
Label: “Current Height”

Displays the current distance from the boom to the target. The target is either ground or canopy, as selected by the operator.

The 2x2 window **(1)** includes a master ON/OFF button **(2)**.

The 2x1 window **(3)** gives only readouts.

Current Height (2x2)

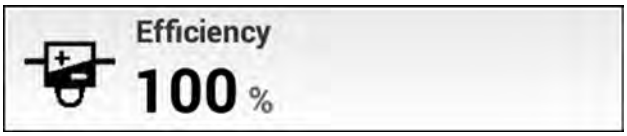


RAPH21PLM1391AA 28

Current Height (2x1)

RAPH21PLM1392AA 29

Efficiency



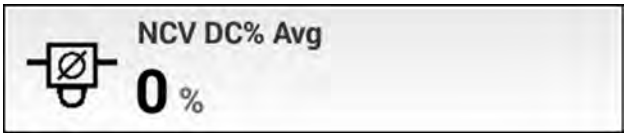
RAPH21PLM1377AA 30

Location: Run screen, Left-Hand Area
Label: “Efficiency”

The “Efficiency” window gives the duty cycle efficiency as a percentage.

The system determines the theoretically ideal duty cycle based upon the pressure setting, tip size, and target flow rate. That ideal duty cycle equates to a **100%** system efficiency. Actual efficiency is calculated from the ideal duty cycle and the actual duty cycle needed to maintain the desired flow rate. Losses lead to a duty cycle efficiency of less than **100%**. Leaks or other conditions that cause excessive flow lead to a duty cycle efficiency of greater than **100%**. In most conditions the duty cycle efficiency is approximately **90 – 105%**.

Nozzle control valve (NCV) duty cycle (DC)% average



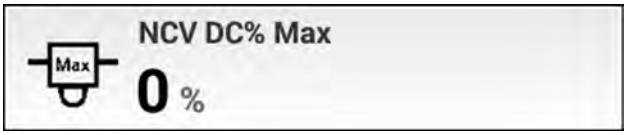
RAPH21PLM1376AA 31

Location: Run screen, Left-Hand Area
Label: “NCV DC% Avg”

The “NCV DC% Avg” window gives an average as a percentage of the duty cycle.

The duty cycle is the percentage of time that the Pulse Width Modulated (PWM) valve disperses product.

NCV DC% maximum



RAPH21PLM1375AA 32

Location: Run screen, Left-Hand Area
Label: “NCV DC% Max”

The “NCV DC% Max” window gives the duty cycle as a percentage when the nozzle disperses the maximum amount of product.

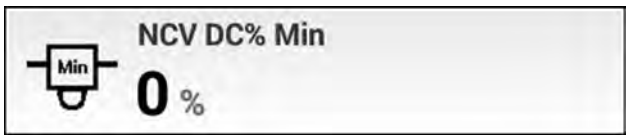
The duty cycle is the percentage of time that the Pulse Width Modulated (PWM) valve disperses product.

NCV DC% minimum

Location: Run screen, Left-Hand Area
Label: “NCV DC% Min”

The “NCV DC% Min” window gives the duty cycle as a percentage when the nozzle disperses the minimum amount of product.

The duty cycle is the percentage of time that the Pulse Width Modulated (PWM) valve disperses product.

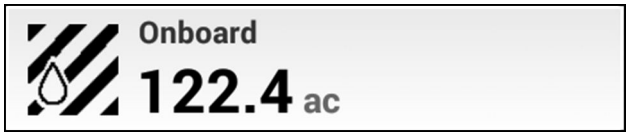


RAPH21PLM1374AA 33

Onboard

Location: Run screen, Left-Hand Area
Label: “Onboard”

The “Onboard” window gives the area you can spray based on the volume in the tank and current rate.



RAPH23PLM0347AA 34

Pump status

Location: Run screen, Left-Hand Area
Label: “Pump Status”

The “Pump Status” window shows a red icon when the pump is OFF and a green icon when the pump is ON.

Press the button to toggle the pump ON and OFF.

RAPH23PLM0342AA 35

Rate presets

Location: Run screen, Left-Hand Area
Label: none

This window gives the rate presets configured in the Universal Terminal (UT) “RCM-Sprayer” object pool.

RAPH21PLM1388AA 36

Raven™ parameters

Location: Run screen
Label: none
The **Raven™** parameters are available in a 1x3, 2x3 or a 2x5 window. The following parameters appear:

Tank level **(1)**

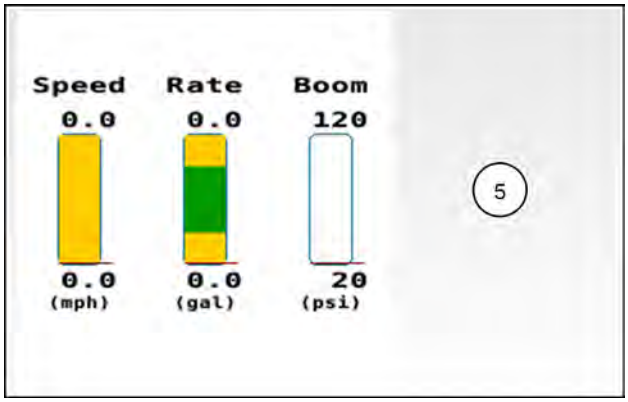
Vehicle speed **(2)**

Flow rate **(3)**

Pressure **(4)**

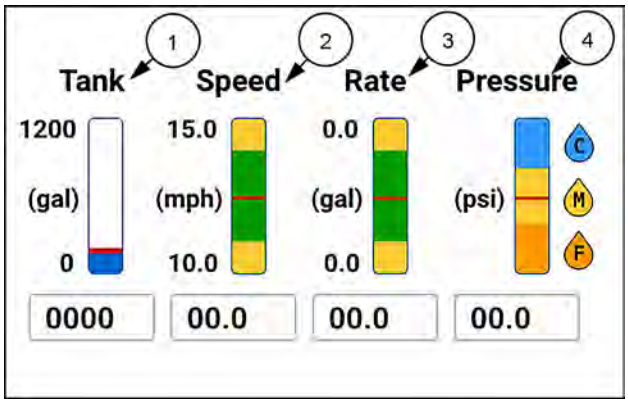
In the 1x3 window **(5)** the tank level does not appear.

Raven™ parameters (1x3)



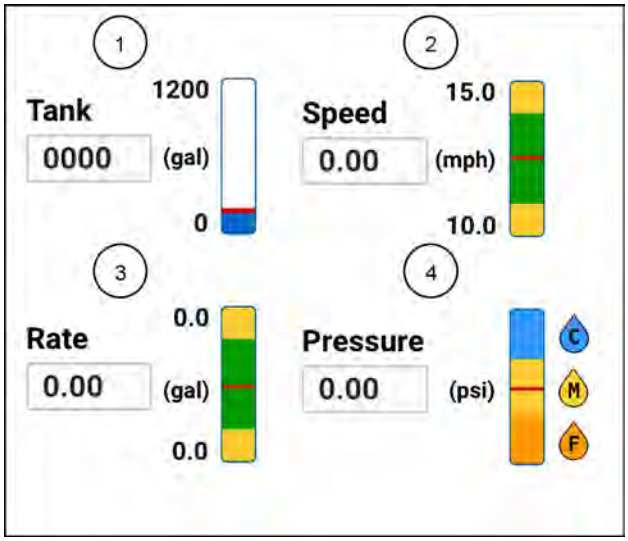
RAPH21PLM1397AA 37

Raven™ parameters (2x3)



RAPH21PLM1185AA 38

Raven™ parameters (2x5)



RAPH21PLM1539BA 39

Spray hours

Location: Run screen, Left-Hand Area
Label: “Spray Hours”

The “Spray Hours” window gives the time that the system has been spraying.

RAPH21PLM1389AA 40

Tank reset

Location: Run screen, Left-Hand Area
Label: “Tank Reset”

The “Tank Reset to Full” window provides a “Reset” button. After you refill the product tank, press the “Reset” button to reset the tank level to the amount of product held by a full tank.

RAPH23PLM0343AA 41

Tank volume

Location: Run screen, Left-Hand Area
Label: “Tank Volume”

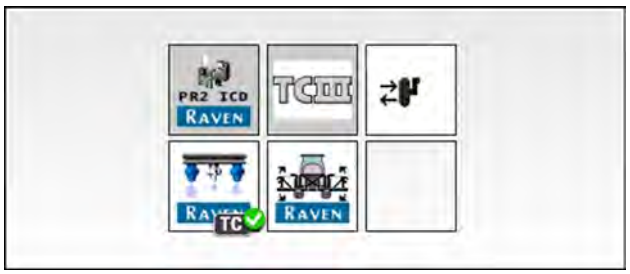
The “Tank Volume” window reads the calculated amount of product in the tank.

RAPH23PLM0344AA 42

Universal Terminal

Location: Run screen, Left-Hand Area
Label: “Tank Volume”

The universal terminal window gives the available and selected universal terminal windows.



RAPH23PLM0346AA 43

“Virtual Tanks” windows

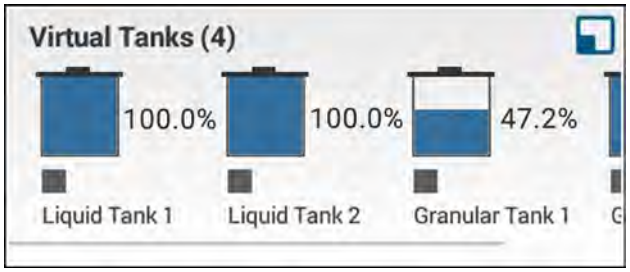
You can monitor all virtual tanks simultaneously from a 1x2 or 2x6 user-defined window (UDW).

Each tank displays the current level, product name, and tank name.

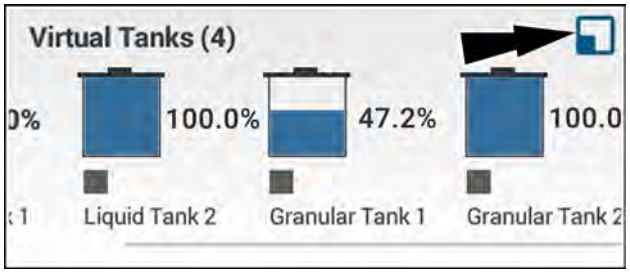
Swipe left or right with one finger to pan the “Virtual Tanks” UDW

Press the “Expand” icon to view this UDW as 2x6.

1x2 UDW



NHPH24PLM0456AA 44



NHPH24PLM0457AA 45

The expanded 2x6 UDW displays

Press any tank to view more information about that tank. The selected tank highlights in blue **(1)**.

If necessary, you can adjust the current tank level **(2)** for the selected tank by pressing the “Current Level” window and using the numeric keyboard.

The tank can be emptied by pressing the “Empty Tank” button **(3)**.

At any time you can return to the 1x2 UDW by pressing the “collapse” icon **(4)**.

Press the "pencil” icon **(5)** on the UDW to edit information for the virtual tank.

NOTE: *You can also add the “Virtual Tanks” 2x6 UDW to a run screen, but it cannot be collapsed to a 1x2 UDW.*

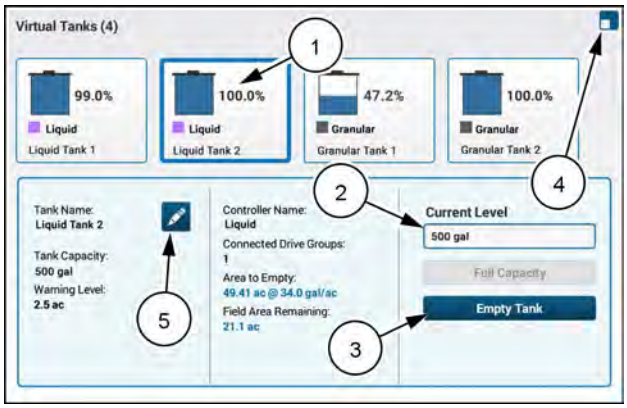
The “Edit Virtual Tank Settings” pop-up window displays.

Edit the virtual tank as necessary.

Press “Save” or “Cancel” to return to the 2x6 UDW.

NOTE: *The “Save” button remains grayed out until you edit the virtual tank.*

2x6 UDW



NHPH24PLM0458AA 46

NHPH24PLM0459AA 47

Set up your application controllers

This section explains the basic operations and uses of the “Application Control” screen. Commonly used screens are provided as examples.

Providing detailed instructions for every applicator configuration is beyond the scope of this section. For detailed instructions, see the operators manual for your applicator configuration.

Definitions

Throughout this section, the following terminology is used:

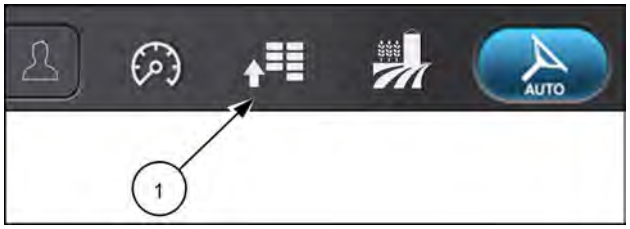
“Controller” – The controller represents a group of drives or sections that apply a single product across the entire width of the applicator. Multiple controllers may apply the same product. The system supports up to six controllers per applicator configuration.

“Drive” – The drive represents a control device that can be assigned an application target with a single product. Each controller can support multiple drives.

“Section” – The smallest incremental element that can turn product application on or off. The system turns sections on and off to control skips or overlaps with already-applied area or at the field boundary. The system supports up to 128 sections with the ISOBUS section control unlock.

Accessing the “Application Control” screen

To access the application control setup options, press the button **(1)** on the top bar to navigate to the “Menu” screen. Press the “Settings” tab, if necessary.

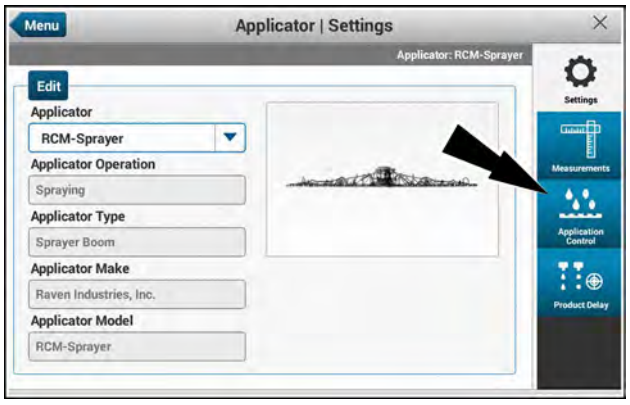


RAIL19PLM0121AA 1

Press the “Applicator” card.

RAPH21PLM1074AA 2

Press the “Application Control” tab. The Applicator / Settings” screen opens.



RAPH23PLM0318AA 3

NOTE: *You must manually configure controllers that are not automatically detected by the display system.* ***Raven™*** *ISOBUS controllers are automatically detected by the system. When the ISOBUS controller has been detected by the system, the "Application Control" settings are visible but inactive.*

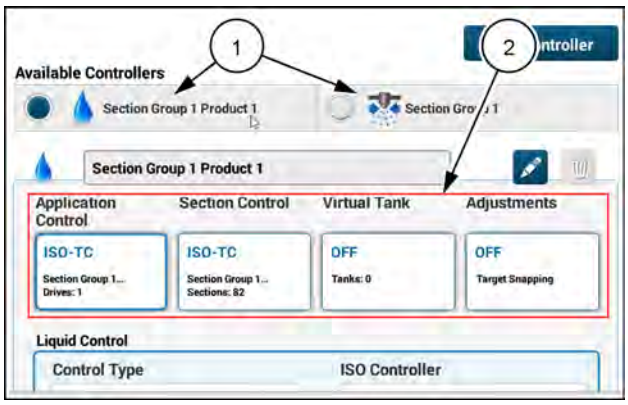
The Application Control" screen displays all of the available controllers **(1)** for your applicator configuration. To select a controller, press the radio button adjacent to the controller.

The system displays details on each available controller. These details include control type, name, and number of drives (for application control) or number of sections (for section control), as well as details on virtual tanks and controller adjustments.

Press each of the boxes **(2)** to access additional controller details that are specific to the selected controller.

NOTE: *Items that are not applicable to the controller being configured appear disabled in the "Application Control" screen.*

Scroll down to view additional controller details for the selected controller.



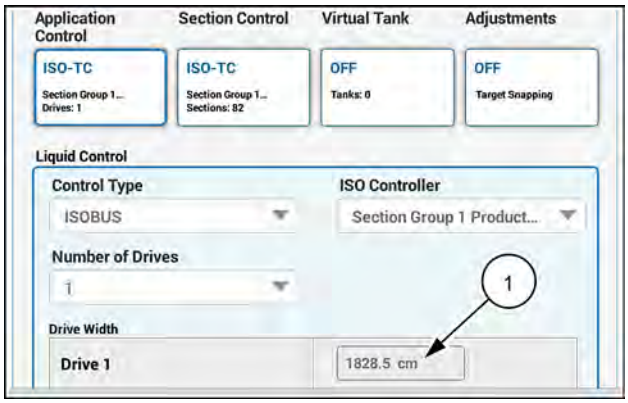
RAPH21PLM1318AA 4

Configure controller for application control

NOTE: *The details for automatically-detected controllers such as* ***Raven™*** *ISOBUS controllers are read-only and cannot be changed.*

Controllers used for application control display:

- Control type
- Controller name
- Number of drives
- Drive width



RAPH21PLM1319AA 5

The ISOBUS controller shown here contains one product drive, with a total effective width of **1828.5 cm** (**719.9 in**).

Scroll down to view each of the drive widths **(1)** if necessary.

Configure controller for section control

NOTE: *The details for automatically-detected controllers are read-only and cannot be changed.*

Controllers used for section control display:

- Control type
- Controller name
- Number of sections
- Section width
- Low speed settings

RAPH21PLM1320AA 6

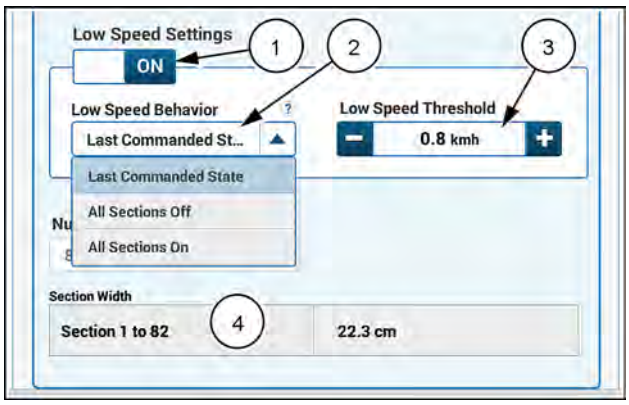
If low speed settings are available, you can turn them ON **(1)**.

If you need low speed settings, select the desired low-speed behavior **(2)** from the following choices:

- Last commanded state
- All sections OFF
- All sections ON

Use the stepper **(3)** to configure the low speed that triggers the selected low-speed behavior.

The ISOBUS liquid controller **(4)** shown here contains 82 sections, with each section controlling **22.3 cm** (**8.8 in**) of the liquid boom.



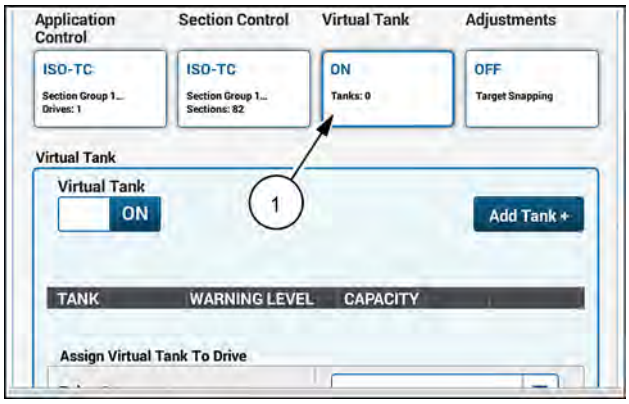
RAPH21PLM1321AA 7

Virtual Tank

Virtual Tank setup options allow you to:

- Enable or disable the virtual tank for the selected controller
- Configure the virtual tank capacity and units
- Set the warning trigger
- Assign a virtual tank to a drive

For more information, see “Virtual tanks” (**5-193**).

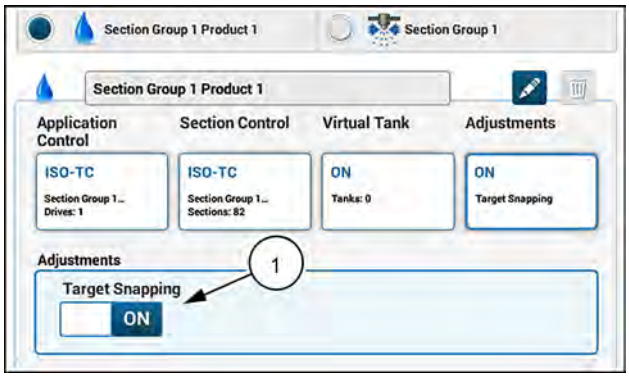


RAPH21PLM1322AA 8

Target Snapping

Target snapping **(1)** is a feature that, when turned on, causes the User-Defined Window (UDW) to report the configured application target for the selected controller, if the actual amount is within **10%** of the application target. This feature prevents you from having to monitor a constantly-fluctuating value when operating the applicator.

Enable or disable target snapping under the “Adjustments” box **(1)**.



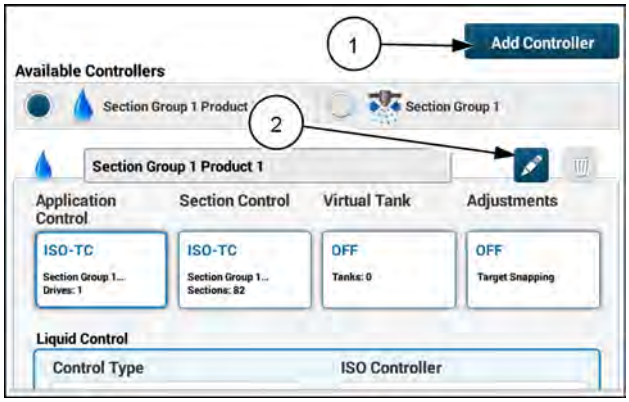
RAPH21PLM1323AA 9

Add a mechanical application controller

To manually add a mechanical application controller, press the “Add Controller” button **(1)**. The “Add Controller” window opens.

Use the edit button **(2)** if you wish to change the name of the controller.

NOTE: *The “Available Controllers” section lists a maximum of six controllers. If six controllers are listed, the “Add Controller” button is inactive.*

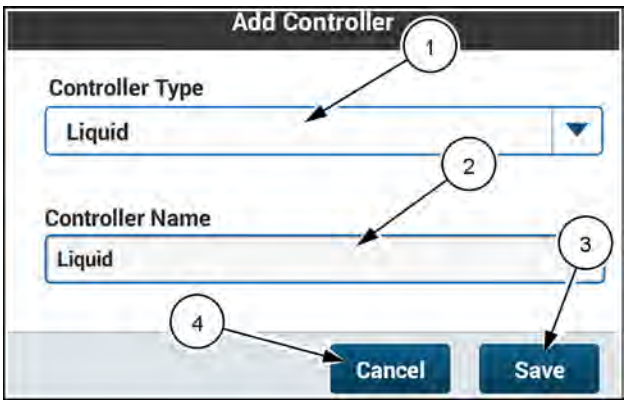


RAPH21PLM1318AA 10

Press the drop-down menu **(1)** to define the controller type. Press the field **(2)** to define the controller name.

Press the “Save” button **(3)** to add the controller.

Press the “Cancel” button **(4)** to cancel the controller addition.

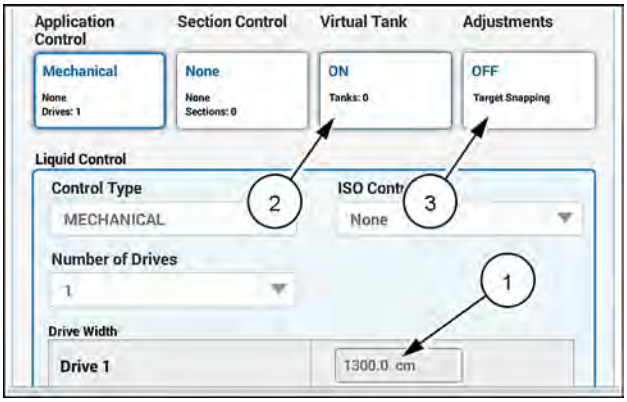


RAPH21PLM1324AA 11

Select the newly-added controller, and then scroll down to view the details of the new controller. The drive width **(1)** of the affected drive appears.

If applicable, press the “Virtual Tank” box **(2)** and the “Adjustments” box **(3)** to configure a virtual tank or enable target snapping.

NOTE: *Under some applicator configurations the “Section Control” and “Adjustments” boxes are inactive.*



RAPH21PLM1325AA 12

Delete a manually-added controller

NOTE: *Application controllers that use the ISOBUS task controller will populate the available controller section, however, they cannot be deleted.*

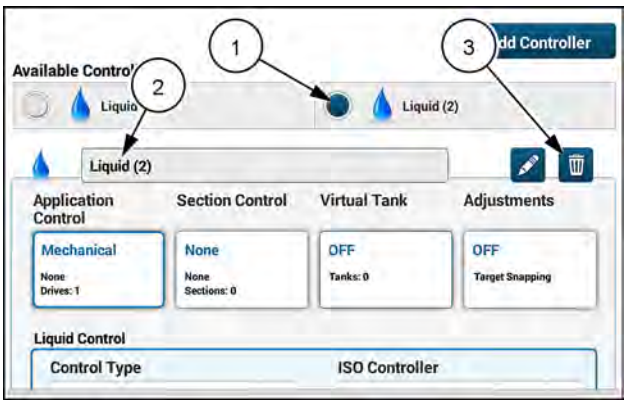
To delete a manually-added controller:

Select the controller **(1)** to be deleted. Selected controller name is visible in the header field **(2)** of the controller settings panel.

Press the “Delete” icon **(3)**. The “Delete Controller” window opens.

Press the "Yes" button **(1)** to delete the controller.

Press the “No” button **(2)** to cancel the deletion.

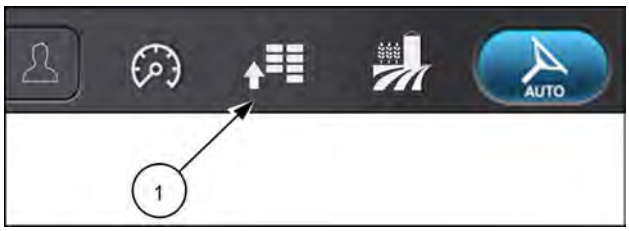


RAPH21PLM1326AA 13

RAPH21PLM1328AA 14

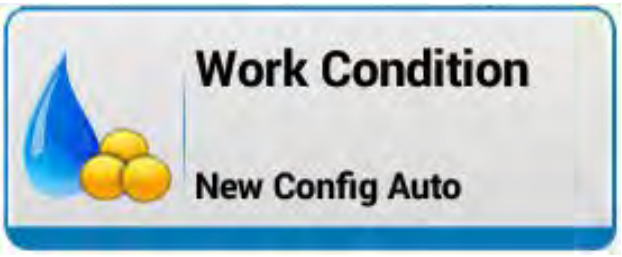
Rate alarms

Press the button **(1)** on the top bar to navigate to the “Menu” screen. Press the “Settings” tab, if necessary.



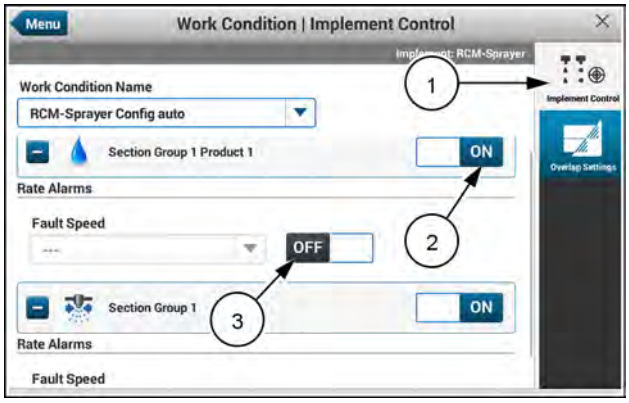
RAIL19PLM0121AA 1

Press the “Work Condition” card.



NHIL20PLM0384AA 2

Press the “Implement Control” icon **(1)**. The “Work Condition | Implement Control” screen opens.



RAPH21PLM1329AA 3

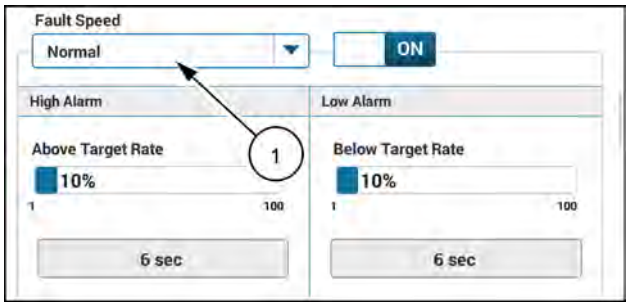
Expand the section for the desired controller.

If necessary, turn the desired controller toggle **(2)** ON.

Scroll down on the “Implement Control” to access the rate alarm setup options.

Press the button **(3)** to turn rate alarms on.

The fault speed setting **(1)** sets the target rate thresholds that determine when a status notification is given to the operator. The status notifications are given when the target rate exceeds or drops below the defined percentage of target rate.

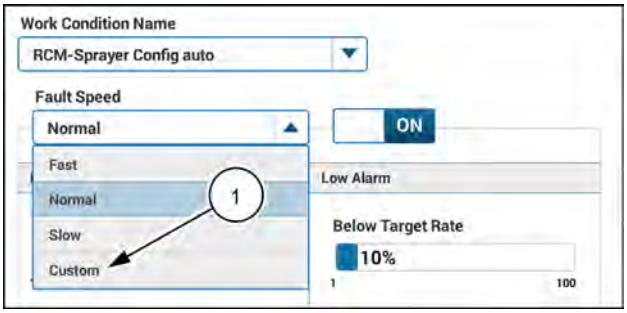


RAPH21PLM1330AA 4

You can select three preset fault speed settings: Normal, Slow, and Fast. There is also a “Custom” selection.

- Normal – **10%** above target rate or **10%** below target rate for six seconds
- Slow – **15%** above target rate or **15%** below target rate for nine seconds
- Fast – **5%** above target rate or **5%** below target rate for three seconds

To set a custom fault speed, press the drop-down menu and select “Custom” **(1)**.

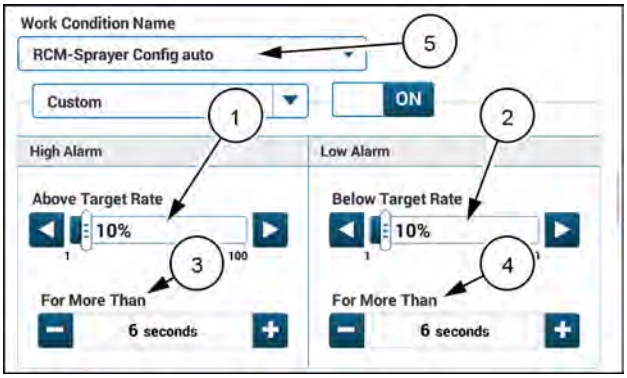


RAPH21PLM1331AA 5

Use the sliders to adjust the “Above Target Rate” **(1)** and “Below Target Rate” **(2)** thresholds. Fine tune the adjustment with the left and right arrows, if necessary.

Use the plus and minus buttons to adjust the above target rate duration **(3)** and the below target rate duration **(4)**.

The custom rate alarm setup options are saved to the selected work condition **(5)**.



RAPH21PLM1332AA 6

Adjust product delay

The “Product Delay” screen allows you to dial in your overlap settings at the headland or when crossing an already-applied area. From this screen, you can adjust the following settings:

- Product start delay – The time between an applicator section being commanded to turn on, and the product actually reaching the ground at the applicator position. This value is multiplied by speed and used for the projected applicator lead position.
- Product stop delay – The time between an applicator section being commanded to turn off and no more product reaching the ground at the applicator position. This value is multiplied by speed and used for the projected applicator lag position.

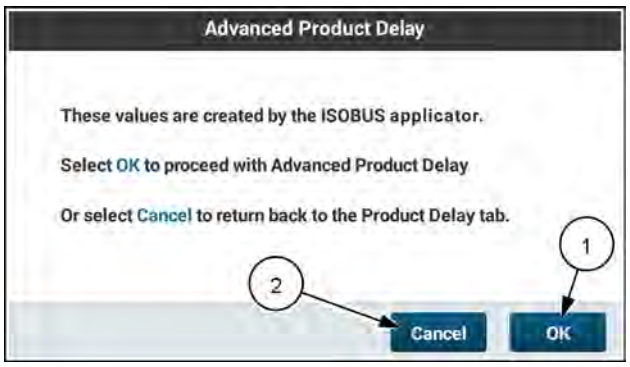
The product delay times for ISOBUS applicators are controlled from the Universal Terminal (UT), and reported on the “Product Delay” screen. Use the UT to adjust the actual start and stop product delay settings, or use the “Advanced product delay” function on this screen to override the settings stored in the UT.

Advanced Product Delay

Press the gear button **(1)** to adjust the product delay for the selected ISOBUS controller.

RAPH21PLM1333AA 1

If the controller was auto-detected from an ISOBUS applicator, the pop-up window appears. Press the “OK” button **(1)** to continue, or press the “Cancel” button **(2)** to return to the “Product Delay” screen.

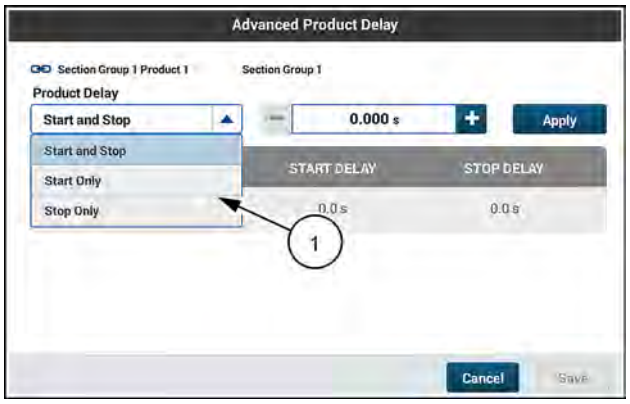


RAPH21PLM1168AA 2

Press the “Product Delay” drop-down menu **(1)** to select the product delay that you wish to change.

- “Start and Stop” – Overrides both the start delay and the stop delay.
- “Start Only” – Overrides only the start delay.
- “Stop Only” – Overrides only the stop delay.

Use the “Start Only” or “Stop Only” selection to adjust the product delay independently.



RAPH21PLM1334AA 3

Use the following formulas to manually calculate the product delay value:

Change in product delay: metric units

$$\frac{\text{amount of error (cm)}}{\text{vehicle speed (km/h) x 27.78}} = \text{change in product delay}$$

Change in product delay: US units

$$\frac{\text{amount of error (inches)}}{\text{vehicle speed (mph) x 17.60}} = \text{change in product delay}$$

If the overlap decision was too late, increase the product delay.

If the overlap decision was too early, decrease the product delay.

Press and hold the value box **(1)** to define a delay time. Use the plus and minus buttons to fine tune the adjustment, if necessary.

Press the “Apply” button **(2)** to save the product delay. The system will update the product delay based on the “Product Delay” selection. The “Save” button **(3)** becomes active.

In this example, the “0.800 s” product delay was set for both the start delay time and the stop delay time.

Press the activated “Save” button **(3)** to save the changes and return to the “Product Delay” screen.

The “Product Delay” screen updates with the new product delay times **(1)**.

If you modified the product delay from this screen and the implement does not accept the new value, the “revert” button **(2)** activates. If needed press the “revert” button to reset the product delay times for the selected controller to the **ISO 11783** setting that is defined by the implement.

RAPH21PLM1335AA 4

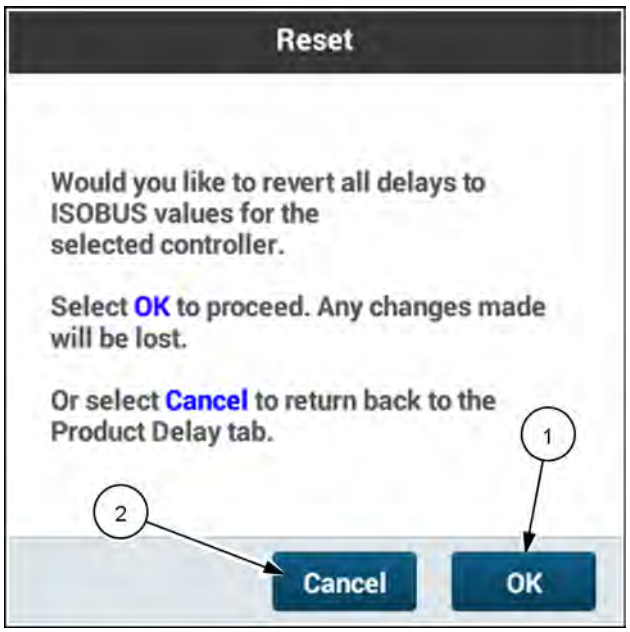
RAPH21PLM1336AA 5

The pop-up window appears. Press the “OK” button **(1)** to confirm, or press the “Cancel” button **(2)** to return without resetting the product delay times.

After setting the product delay, use the settings on the “Overlap Settings” screen to set an amount of intentional overlap at the headland:

- “Start Early Distance” – The amount of intentional overlap when going out of the headland or already-applied area.
- “Stop Late Distance” – The amount of intentional overlap when going into the headland or already-applied area.

For more information, see “Set boundary and overlap controls” (**5-196**).



RAPH21PLM1538BA 6

Product delay calibration

Use the product delay calibration workflow to determine the start and stop delay values that your applicator requires. You typically only change product delay when setting up a new applicator, or when dialing in your applicator during the first use of the season.

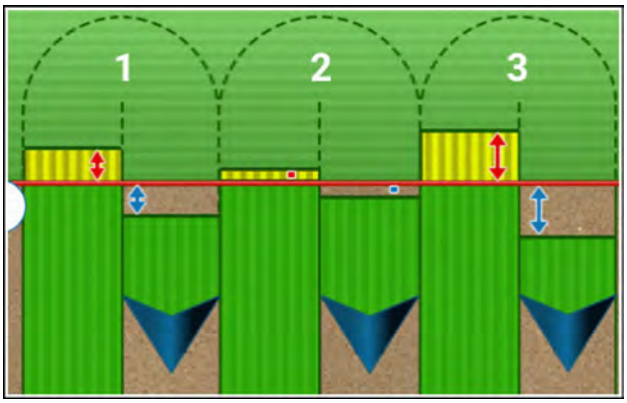
During the product delay calibration, you will:

1. Test the overlap control at the headlands and determine how far your applicator applied product too early or too late to measure the performance.
2. Take note of the average speed when the applicator crossed the headland area.
3. Determine the average error for the stop product delay.
4. Determine whether the stop overlap decision was made too early or too late.
5. Determine the average error for the start product delay.
6. Determine whether the start overlap decision was made too early or too late.

During the calibration, use values from multiple passes to determine the average error. One pass includes both entering the headland and exiting the headland.

As a starting point, perform three passes and record the error distance. CASE IH recommends that you continue to measure and adjust the product delay settings until the delay time is less than **0.1 s**.

The overlap decision point is the recorded headland or boundary line. This ensures product application up to the boundary or headland.



RAPH21PLM1368AA 7

Perform the product delay calibration only after all applicator setup has been completed. For the best results, operate the sprayer as you would normally to best simulate actual operating conditions. You will be required to test overlap in a straight headland area, stop, and measure the performance of the applicator applying the product.

Your start early and stop late settings will be automatically set to “0” to ensure correct calibration.

Use the following formula to calculate the average error:

Average Error:

$$\frac{\text{(Error 1 + Error 2 + ... + Error N)}}{\text{Number of passes, N}} = \text{Average Error}$$

An example of calculating average error for start product delay during three passes is shown below. The average error calculation for stop product delay is determined in the same manner.

Start product delay – Average error calculation

$$\frac{\textbf{14.4 in + 14.5 in + 15.2 in}}{3} = \textbf{14.7 in}$$

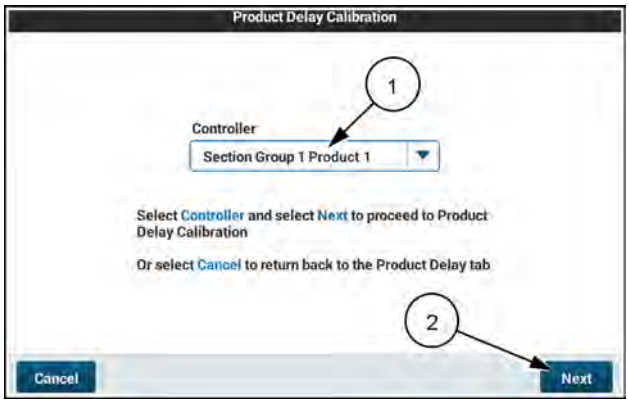
The value of **14.7 in** is what you will enter for start product delay when prompted by the product delay calibration workflow.

To access the product delay calibration workflow, press the “Calibrate” button **(1)**.

RAPH21PLM1336AA 8

Press the “Controller” drop-down menu **(1)** and select the controller that you wish to calculate product delay for.

Press the “Next” button **(2)** to begin.



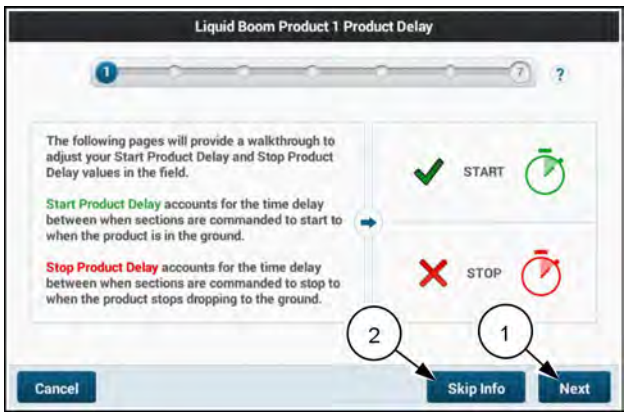
RAPH21PLM1337AA 9

Press the “Next” button **(1)** to read through the wizard for information that may help you during the calibration.

The page states, “The following pages will provide a walk-through to adjust your start product delay and stop product delay values in the field. Start product delay accounts for the time delay between when sections are commanded to start to when the product is on the ground. Stop product delay accounts for the time delay between when sections are commanded to stop to when the product stops dropping to the ground.”

Press the “Skip Info” button **(2)** to jump ahead to the calculation.

Review and follow the instructions in each step of the wizard.



NHPH23PLM1378AA 10

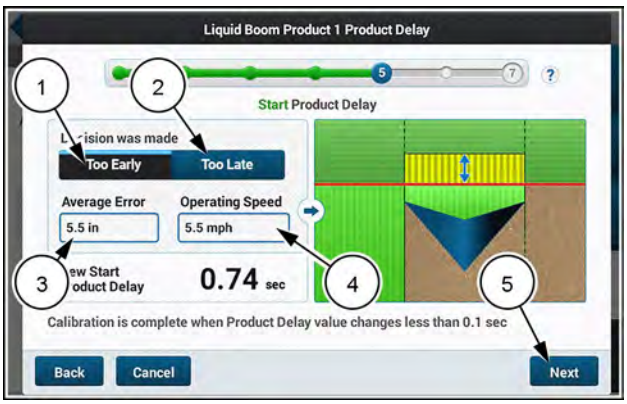
Provide the value of your average error calculation to calculate a new start product delay:

- Press the “Too Early” button **(1)** or “Too Late” button **(2)**, depending on the behavior of the applicator at the headland.
- Press the box **(3)** and enter the average error.

Press the box **(4)** and enter the operating speed of the sprayer.

The system automatically calculates the new value.

Press the “Next” button **(5)** to continue.



RAPH23PLM0292AA 11

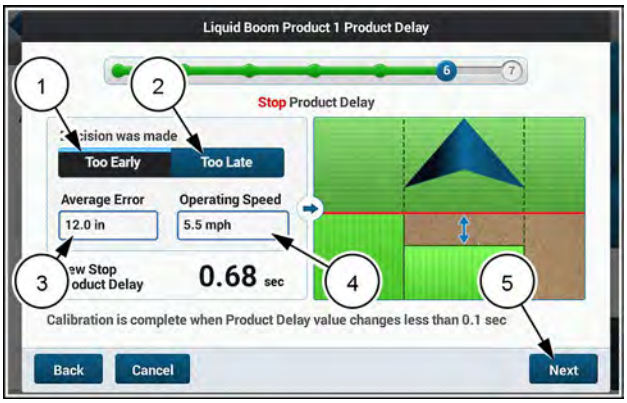
Provide the details of your test to calculate a new stop product delay:

- Press the “Too Early” button **(1)** or “Too Late” button **(2)**, depending on the behavior of the applicator at the headland.
- Press the box **(3)** and enter the average error.

Press the box **(4)** and enter the operating speed of the sprayer.

The system automatically calculates the new value.

Press the “Next” button **(5)** to continue.

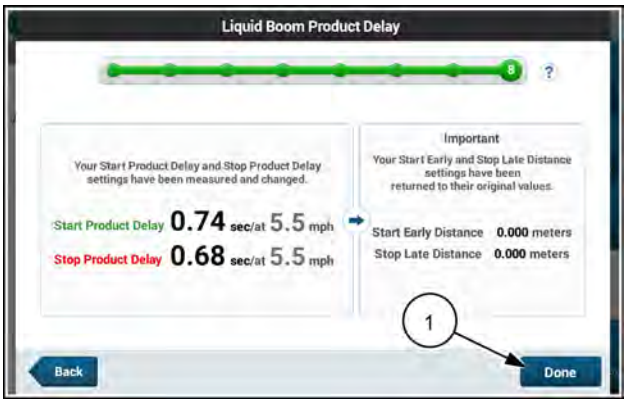


RAPH23PLM0293AA 12

A summary of your new product delay values is shown.

The system automatically returns the start early and stop late distances (configured on the “Overlap Settings” screen) to their original values.

Press the “Done” button **(1)** to accept your changes and return to the “Product Delay” screen.

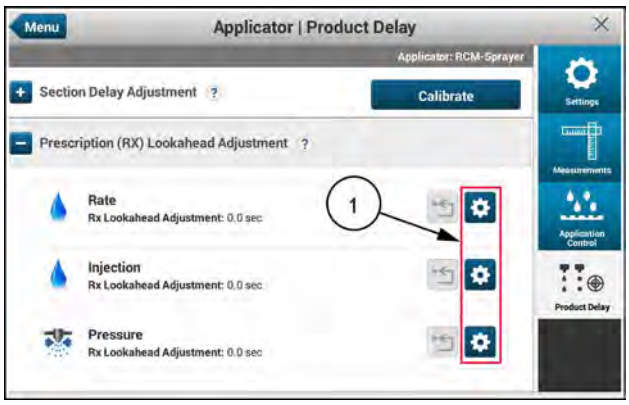


RAPH23PLM0294AA 13

Prescription (RX) lookahead adjustment

Prescription (Rx) lookahead accounts for the time delay between when a drive is sent a new rate and when the new rate is physically being applied. To shift rate changes earlier, increase the delay value. To shift rate changes later, decrease the delay value.

Press the gear button **(1)** for the desired section.

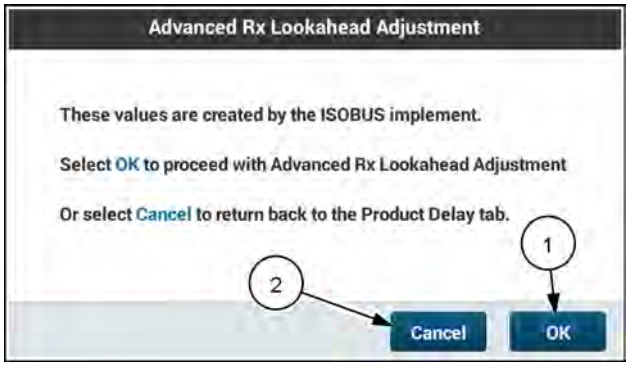


RAPH23PLM0351AA 14

The “Advanced Rx Lookahead Adjustment” popup window appears. The window states, “These values are created by the ISOBUS implement. Select OK to proceed with Advance Rx Lookahead Adjustment. Select Cancel to return to the Product Delay tab.”

Press the “OK” button **(1)** to continue the advanced Rx-lookahead adjustment procedure.

Press the “Cancel” button **(2)** to close the popup window without performing the advanced Rx-lookahead adjustment procedure.



RAPH22PLM1706AA 15

If needed check the check box **(1)** to select the drive.

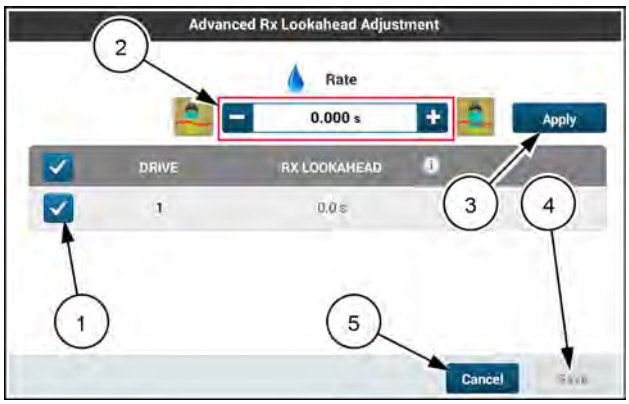
Use the steppers **(2)** to establish the desired adjustment time.

Press the “Apply” button **(3)**.

Press the “Save” button **(4)** when active to save your new value.

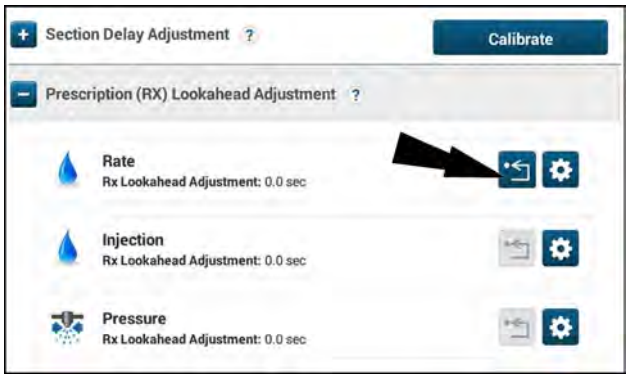
Press the “Cancel” button **(5)** to discard the new value and close the “Advanced Advanced Rx Lookahead Adjustment” window.

Repeat this procedure for further adjustments if the results are unsatisfactory.



RAPH23PLM0352AA 16

If you modified the Rx lookahead adjustment from this screen and the implement does not accept the new value, the “revert” button activates. If needed press the “revert” button to reset the Rx lookahead adjustment for the selected controller to the **ISO 11783** setting that is defined by the implement.

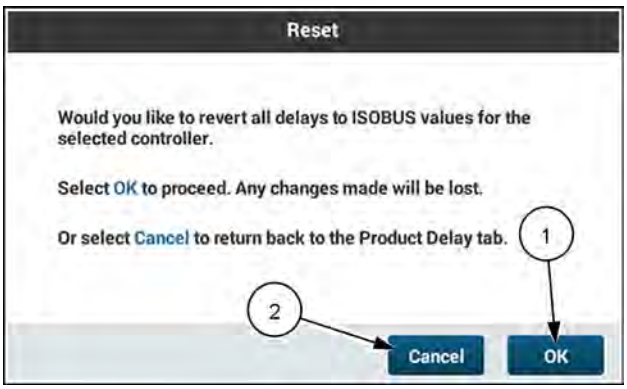


RAPH23PLM0353AA 17

The “Reset” popup window appears. The window states, “Would you like to revert all delays to ISOBUS values for the selected controller? Select OK to proceed. Any changes made will be lost. Select Cancel to return to the Product Delay tab.”

Press the “OK” button **(1)** to revert the map alignment to the **ISO 11783** value established by the implement.

Press the “Cancel” button **(2)** to keep your adjusted values and close the “Reset” window.



RAPH22PLM1695AA 18

Map alignment

Map rate alignment where supported is the time between a physically applied rate change and when the system records it on the map. Modifying this value shifts rate data to reflect the physical location on the ground but does not affect product placement. Increasing this value shifts data on the map later. Decreasing this value shifts data on the map earlier. This procedure aligns the coverage area to eliminate false overlaps and gaps in a mapped area.

NOTE: *The **ISO 11783** implement establishes default mapping settings. This procedure overrides the **ISO 11783** settings.*

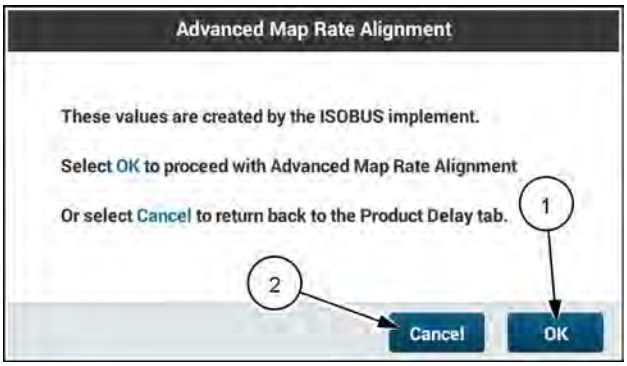
RAPH23PLM0295AA 19

Press the gear button **(1)** for the desired section.

The “Advanced Map Rate Alignment” popup window appears. The window states, “These values are created by the ISOBUS implement. Select OK to proceed with Advanced Map Rate Alignment. Select Cancel to return to the Product Delay tab.”

Press the “OK” button **(1)** to continue the advanced map rate alignment procedure.

Press the “Cancel” button **(2)** to close the popup window without performing the advanced map rate alignment procedure.



RAPH22PLM1692AA 20

If needed check the check box **(1)** to select the drive.

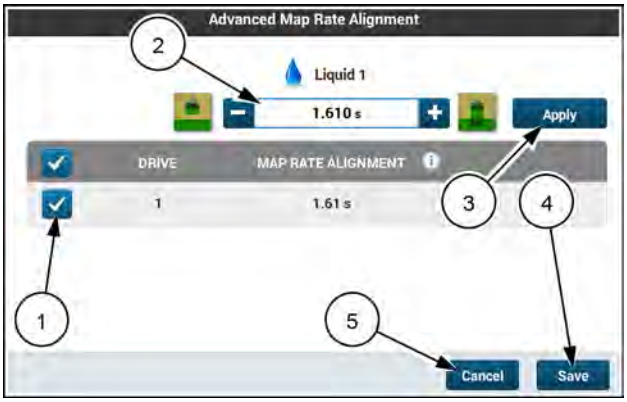
Use the steppers **(2)** to establish the desired alignment time.

Press the “Apply” button **(3)**.

Press the “Save” button **(4)** to save your new value.

Press the “Cancel” button **(5)** to discard the new value and close the “Advanced Map Rate Alignment” window.

Repeat this procedure for further adjustments if the results are unsatisfactory.



RAPH23PLM0296AA 21

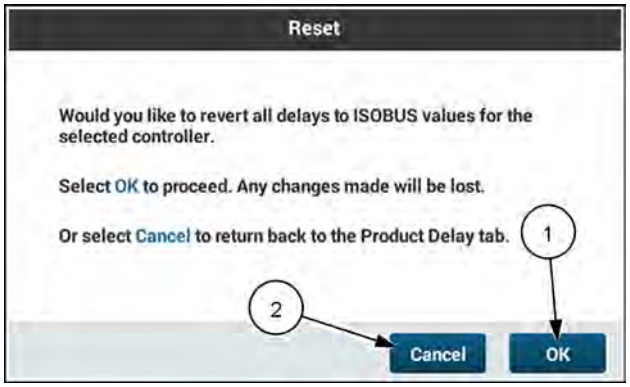
If you modified the map rate alignment from this screen and the implement does not accept the new value, the “revert” button **(2)** activates. If needed press the “revert” button to reset the map rate alignment for the selected controller to the **ISO 11783** setting that is defined by the implement.

RAPH23PLM0297AA 22

The “Reset” popup window appears. The window states, “Would you like to revert all delays to ISOBUS values for the selected controller? Select OK to proceed. Any changes made will be lost. Select Cancel to return to the Product Delay tab.”

Press the “OK” button **(1)** to revert the map alignment to the **ISO 11783** value established by the implement.

Press the “Cancel” button **(2)** to keep your adjusted values and close the “Reset” window.



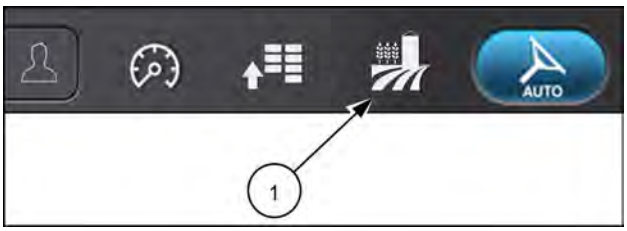
RAPH22PLM1695AA 23

Assign controllers and adjust rates

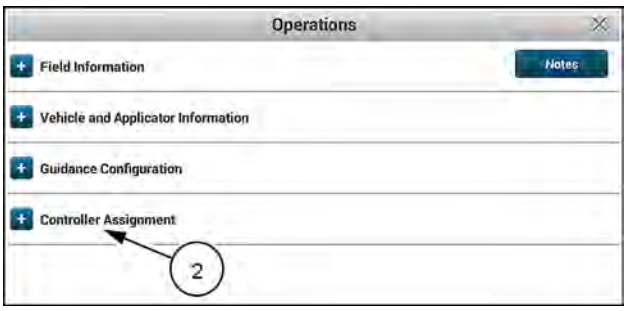
Accessing the “Controller Assignment” section

Click the “Operations” button **(1)** on the top bar to access the “Operations” screen.

If necessary, click the “+” button **(2)** in front of the “Controller Assignment” section to expand the section.



RAIL19PLM0121AA 1



RAPH21PLM1338AA 2

The “Controller Assignment” section is visible when the system detects an applicable controller.

If a task has preassigned products, targets, or prescriptions, the assigned product, target, or prescription populates automatically in the “Controller Assignment” section.

Only products, targets, and prescriptions compatible with the applicator active controllers can populate the “Controller Assignment” section. You can build a work condition in the “Work Condition” screen using products or targets that are not compatible with the active controllers, but the products or targets do not populate the “Controller Assignment” section of the “Operations” screen.

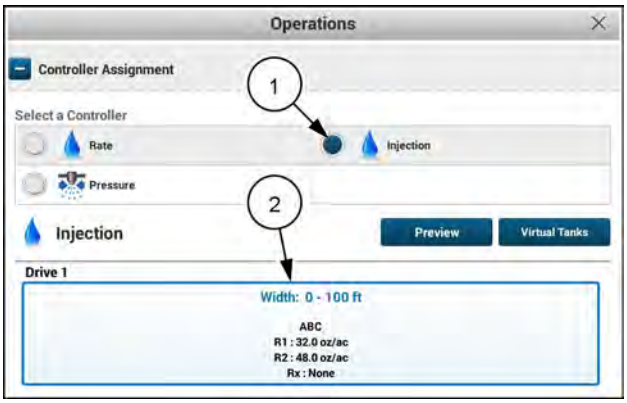
Drive windows

The controllers for your applicator are shown.

Press the radio button **(1)** next to the controller to access product and rate assignments.

If the controller has more than one drive, press the box **(2)** for each drive to assign the product and rates individually.

NOTE: *If a controller type can support only one drive, such as in a sprayer applicator, you cannot change the number of drives. Only one drive appears in the “Operations” screen.*



RAPH23PLM0354AA 3

“Product”

Select the product from the drop-down menu **(1)**. If the product doesn’t exist in your product library, press the “Add New” button from the drop-down menu to create a new product.

Alternatively, press the “copy” icon on the drop-down menu to create a new product from an existing product.

“Rate 1” and “Rate 2”

During product creation, you defined the “Rate 1” and “Rate 2” values. The values are shown below the product selection.

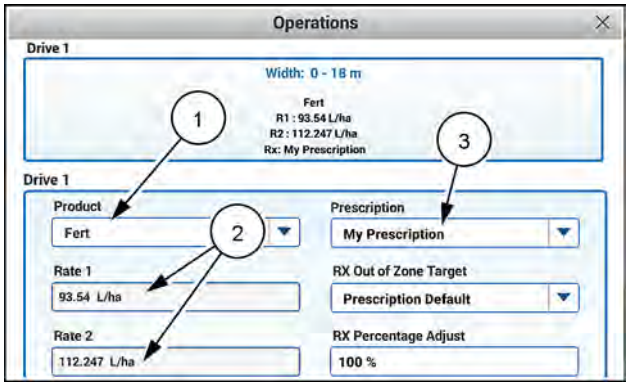
If needed, press the “Rate 1” or “Rate 2” box **(2)** to adjust the values.

NOTE: *You can configure armrest buttons to select and adjust your rates. See “Sprayer card configurable controls” (**3-23**).*

Prescription

If there is a prescription associated with the selected task, it is automatically selected for applicable controller types. If there are multiple prescriptions, they appear in the “Prescription” drop-down menu **(3)**. Select one of the listed prescriptions.

NOTE: *You can configure an armrest button to select your prescription. See “Sprayer card configurable controls” (**3-23**).*



RAPH21PLM1341AA 4

“ RX Out of Zone Target” options

RAPH21PLM1341AA 5

You can edit the “ RX Out of Zone Rate.” It can also appear as a property of an **ISO** prescription. If the “RX Out of Zone Rate” is not pre-populated by a prescription, the default is equal to “Rate 1” in the drive window.

Press the box **(4)** to open the “ RX Out of Zone Rate” drop-down menu. “Rate 1,” “Rate 2,” and “Prescription Default” can appear as options.

Rx percentage adjustment factor

You can change the Rx percentage adjustment factor for a prescription that was created in farm management software, but operating or field conditions require a change to original rate in the prescription without the need to generate a new prescription. Examples of conditions requiring the adjustment are too much rain, or a different tank mix concentration.

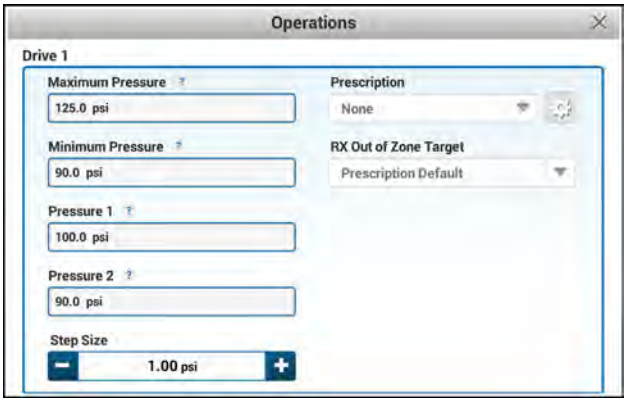
NOTE: *This replaces the “Rx Scale Factor” in previous CASE IH display models.*

The default value is **100%**. When the prescription rates are read from the prescription map, they are multiplied by the Rx percent adjustment factor before being applied to the field.

Press the box **(5)** and enter the desired percentage.

Target

Controllers such as pressure controllers display their parameters as targets instead of rates. For example, a pressure controller gives the fields as “Pressure 1” and “Pressure 2.”



RAPH23PLM0355AA 6

Assign a Variable Rate Application (VRA) prescription

Import a Variable Rate Application (VRA) prescription

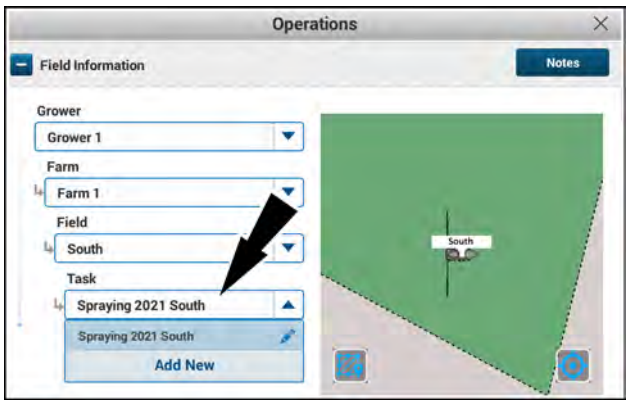
Variable Rate Application (VRA) prescriptions assist the operator in obtaining maximum productivity and profit by providing the vehicle and implements/applicator precise instructions to apply inputs such as seed, fertilizer, and chemicals to your field.

VRA prescriptions are created in the farm management software. To generate prescriptions, follow the instructions applicable to the farm management software that is being used. Prescriptions can then be exported for use in the display.

Prior to use in the display, VRA prescriptions must be imported using the “Data Management” screens. See “Importing data” (**7-14**) for instructions on importing data into the display.

The prescriptions are associated with the tasks built in the “Operations” screen. The associated prescriptions are automatically selected for valid controller types.

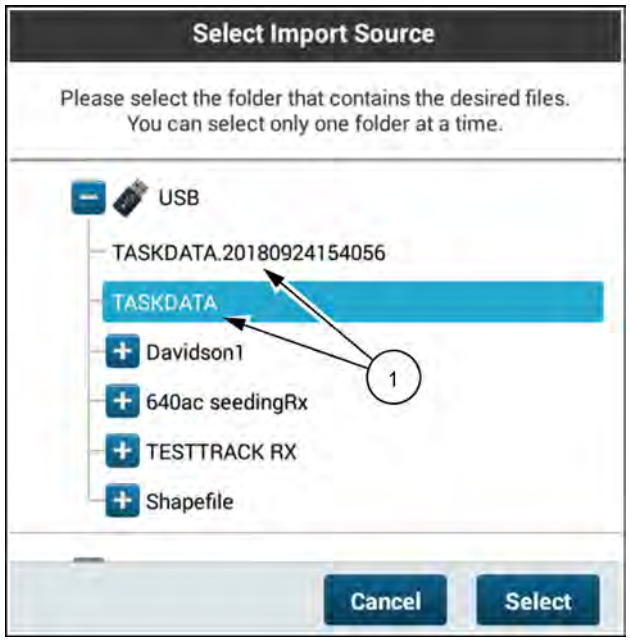
The imported prescriptions are automatically assigned to the fields where tasks are built. If multiple prescriptions are assigned to a task, you will be prompted to select one.



RAPH21PLM1304AA 1

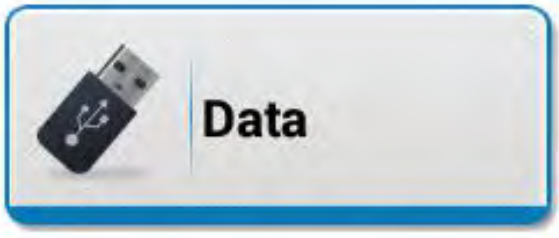
Files are imported from the USB memory device or online source such as the AFS Connect portal. The import process prompts you to select a location to place each prescription.

NOTE: *Prescriptions and boundaries stored as ISOXML files appear in the folders* ***(1)*** *shown in the “Select Import Source” pop-up window. In this case, there is no special import/export utility. The ISOXML prescriptions and boundaries are imported/exported using the same procedure as other file types. The import utility is used only when prescriptions and boundaries are stored in the Shapefile format.*



RAIL18PLM1387BA 2

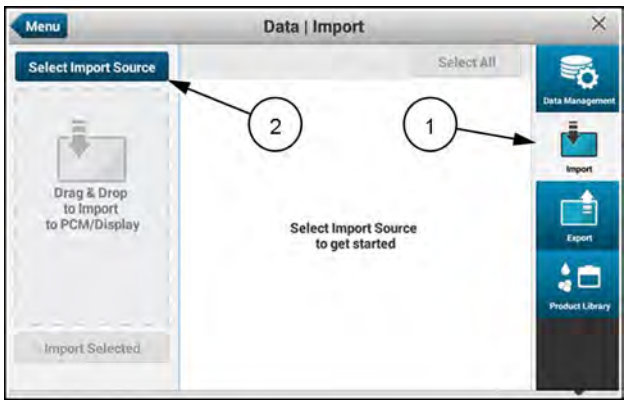
To import the prescription, navigate to the “Data” card.



NHIL20PLM0744AA 3

Press the “Import” tab **(1)**.

Press the “Select Import Source” button **(2)**. The “Select Import Source” window appears.

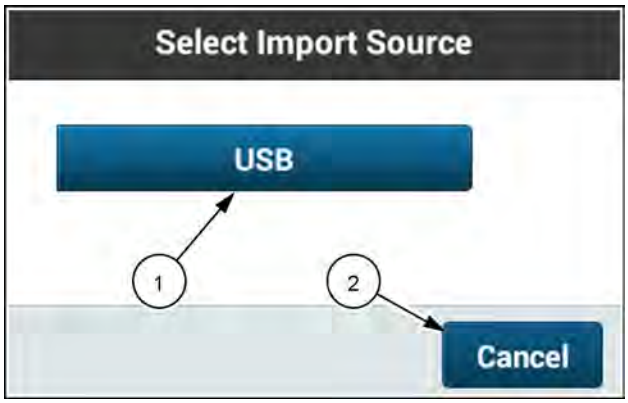


RAIL18PLM1602AA 4

Select the desired option **(1)** for your import. A directory tree with file structure that includes your prescriptions is visible.

NOTE: *Prescriptions can be imported from either a USB memory device or online, if they are available. In this example, the USB memory device is available.*

Press the “Cancel” button **(2)** to cancel the import and return to the ”Import” screen.

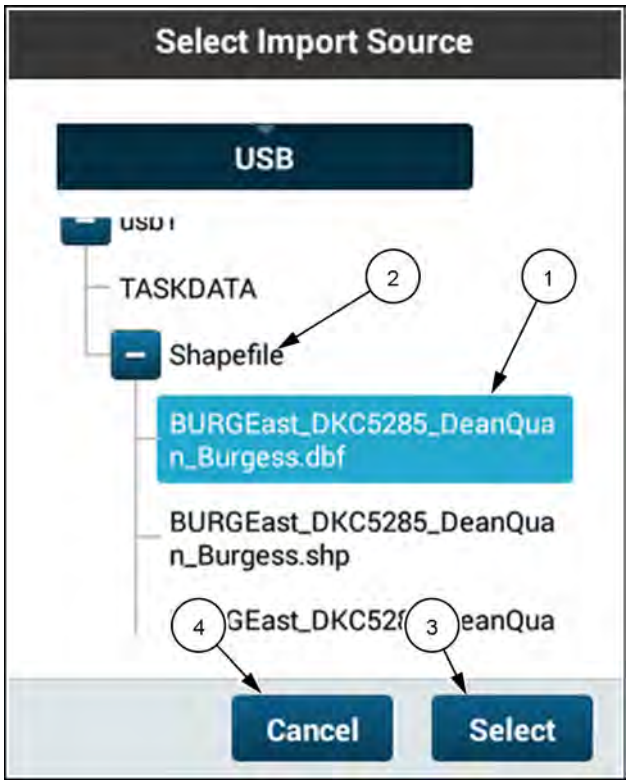


RAIL18PLM1606AA 5

Press a prescription file **(1)** to select it. In this window, you can only select one prescription at a time. If you wish to select more than one prescription, select the folder **(2)**.

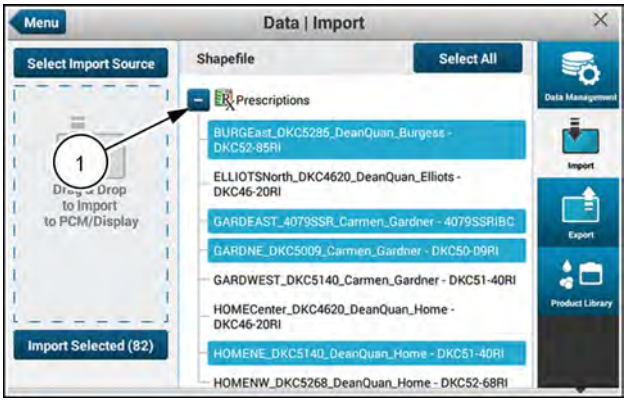
Press the “Select” button **(3)** to continue the import.

Press the “Cancel” button **(4)** to cancel the import process and return to the “Import” screen.



RAIL18PLM1232BA 6

Press the expand (+) and collapse (-) buttons **(1)** as needed to view the list of prescriptions.

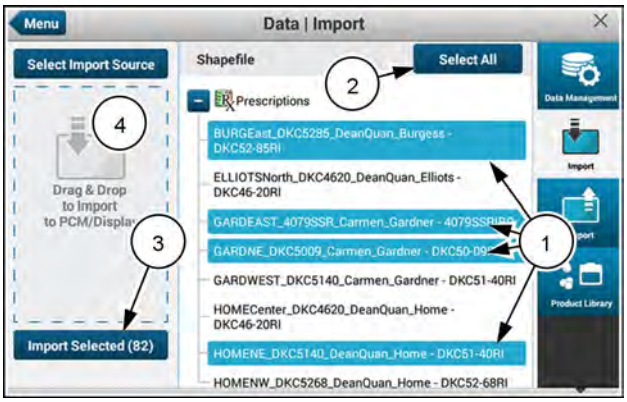


RAIL18PLM1603AA 7

Press to select the desired prescriptions **(1)**, or use the “Select All” button **(2)** to select all available prescriptions. You may need to scroll down to see all of the available prescriptions.

NOTE: *A highlighted item indicates that the item is selected for import. More than one item can be selected. To deselect an inadvertently selected item, press the prescription again.*

NOTE: *The “Select All/Deselect All” button **(2)** is used to select/deselect all of the prescriptions. The button text is dependent on how many prescriptions are selected. The "Deselect All" button is only available when all prescriptions are selected. Press the "Select All" button to select all prescriptions. Press the "Deselect All" button to deselect all prescriptions.*



RAIL18PLM1603AA 8

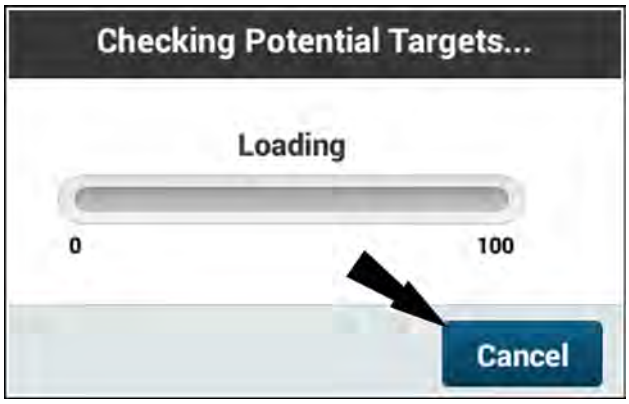
Press the “Import Selected” button **(3)**. The import procedure begins.

NOTE: *You can also drag-and-drop a prescription to the “Drag and Drop” area **(4)** of the screen. The import automatically starts when you drop the object.*

For each imported prescription, the software selects only targets that are suitable for the prescription type.

A ”Checking Potential Targets” window opens followed by the Select Target” window.

To cancel the import, press the “Cancel” button to cancel the import and return to the “Data/Import” window.



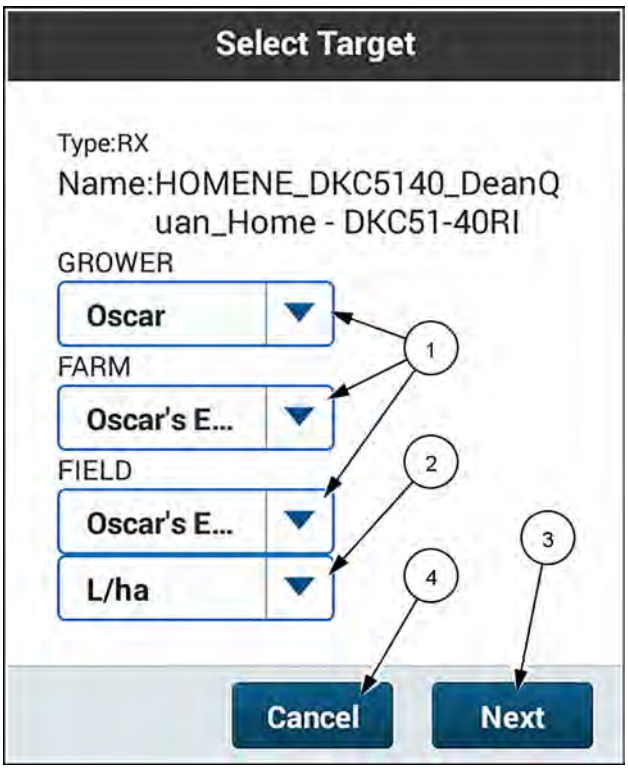
RAIL18PLM1604AA 9

Use the drop down menus **(1)** to select a Grower-Farm-Field and the unit of measurement for the prescription.

NOTE: *A Grower-Farm-Field location and the unit of measurement* ***(2)*** *must be selected for each prescription. The display will cycle through with a "Select Target" window for each imported prescription. Repeat these steps as needed until all imported prescriptions are assigned.*

Press the "Next" button **(3)** to confirm your changes and continue the procedure.

Press the "Cancel" button **(4)** if you wish to cancel the import and return to the "Data/Import" window.



RAPH21PLM1342AA 10

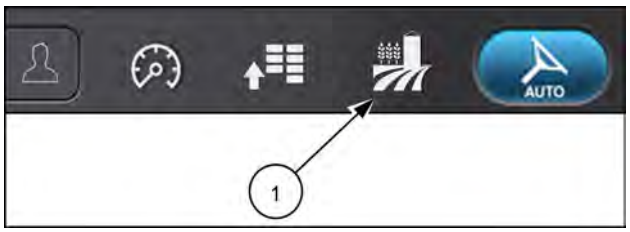
NOTE: *When selecting a Grower-Farm-Field location in the "Data Management" window, the field now lists prescriptions along with tasks.*

RAIL18PLM1605AA 11

Assign a Variable Rate Application (VRA) prescription

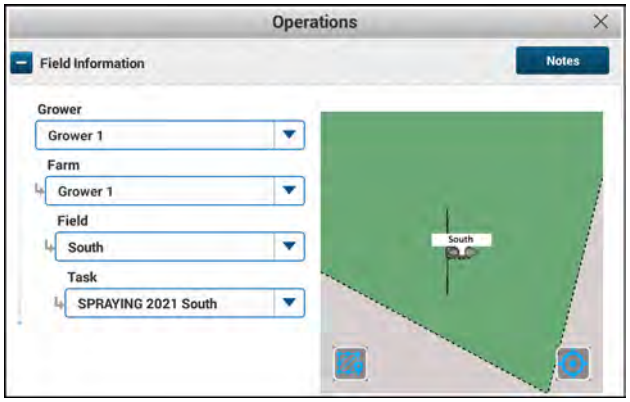
To use an imported prescription:

Press the “Operations” button **(1)** on the top bar to open the “Operations” screen.



RAIL19PLM0121AA 12

Make sure that the grower, farm, field, and task selections are correct for your current operation. If needed, use the drop down menus to make the selections.

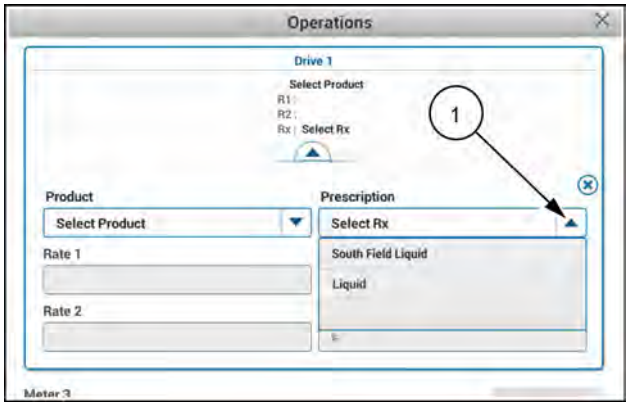


RAPH21PLM1105AA 13

If there are multiple prescriptions available, select the desired prescription from the available list **(1)**.

NOTE: *When a task is selected in the “Operations” screen, the associated prescriptions are automatically selected for valid controller types (liquid, seed, etc.)*

In this example, a liquid controller has two prescriptions from which to choose.



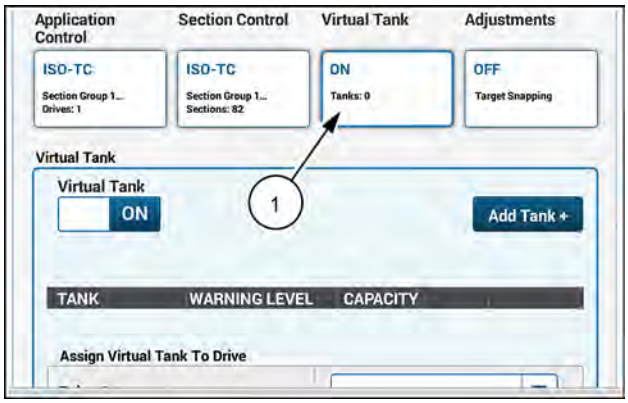
RAIL19PLM1145AA 14

Virtual tanks

Virtual tank setup for each application controller is performed on the “Application Control” screen. For more information on configuring an application controller, see “Setup your application controllers” (**5-170**).

Configure the virtual tank

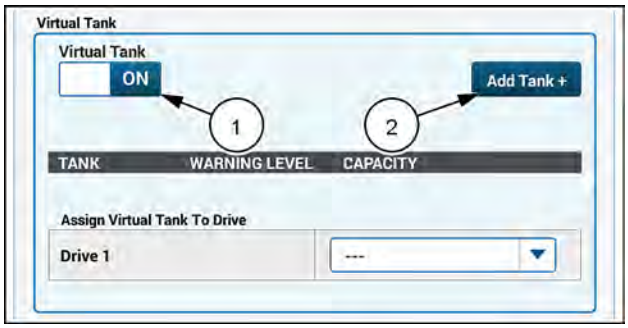
With your desired controller selected, press the “Virtual Tank” box **(1)** and scroll down to configure the virtual tank.



RAPH21PLM1322AA 1

Press the toggle **(1)** to enable or disable virtual tanks. When virtual tanks are disabled, the setup options do not appear.

Press the ”Add Tank+” button **(2)**. The “Add New Virtual Tank” window appears.



RAPH21PLM1343AA 2

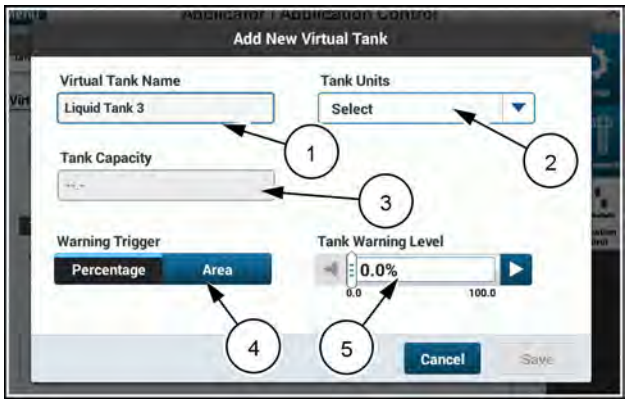
The setup options will default to virtual tank one.

Press the “Virtual Tank Name” box **(1)** and define the name.

Press the “Tank Units” drop-down menu **(2)** and define your units of measurement.

Press the “Tank Capacity” field **(3)** and define the capacity of the virtual tank.

Select your warning trigger **(4)**. The warning trigger provides a status notification to the operator when the defined warning threshold level is met.



NHPH24PLM0460AA 3

The available warning triggers are:

- Percentage
- Area

Use the slider **(5)** to define the threshold for the tank warning level. Use the left and right arrow buttons to make small adjustments to the threshold, if necessary.

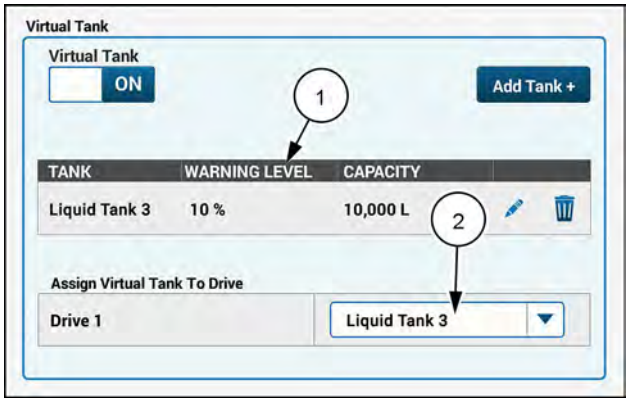
Press the “Save” button **(1)** to save your settings.

Press the “Cancel” button **(2)** to discard your settings.

NHPH24PLM0461AA 4

The virtual tank settings **(1)** appear in the “Virtual Tank” area.

Open the drop-down menu **(2)** to see the configured virtual tank. Select the virtual tank to assign it to “Drive 1.”



NHPH24PLM0463AA 5

Virtual tank adjustments

After you enable and configure a virtual tank within the "Application Control” screen, go to the “Controller Assignment” section of the “Operations” screen to configure the virtual tank level.

The virtual tank defaults to the empty state. In this case, the status notification is shown because the warning threshold is set to activate when the tank level falls below **10%**.

With the applicable controller **(1)** selected, press the “VIRTUAL TANKS” button **(2)** to fill the virtual tanks.

RAPH21PLM1347AA 6

NOTE: *In ISOBUS configurations the value is created by the ISOBUS implement, such as the ISOBUS nodes on this sprayer. It is recommended to use the ISOBUS UT interface.*

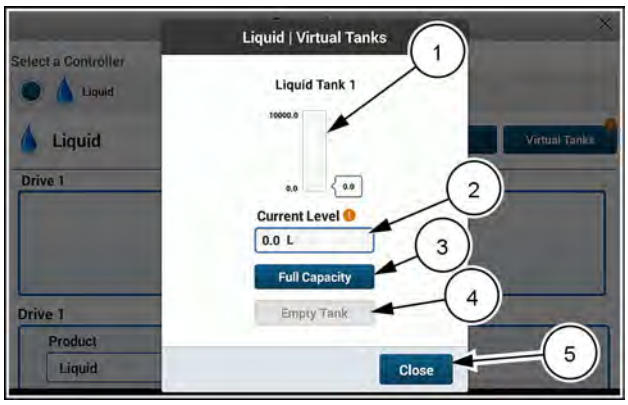
The virtual tanks that are configured for the selected controller are shown. The bar graph **(1)** indicates the level in the virtual tank.

Press the “Current Level” box **(2)** to define a custom value for the amount of product in the virtual tank.

Press the “FULL CAPACITY” button **(3)** to fill the virtual tank.

Press the “EMPTY TANK” button **(4)** to empty the virtual tank.

Press the “CLOSE” button **(5)** to return to the “Operations” screen.



NHPH24PLM0462AA 7

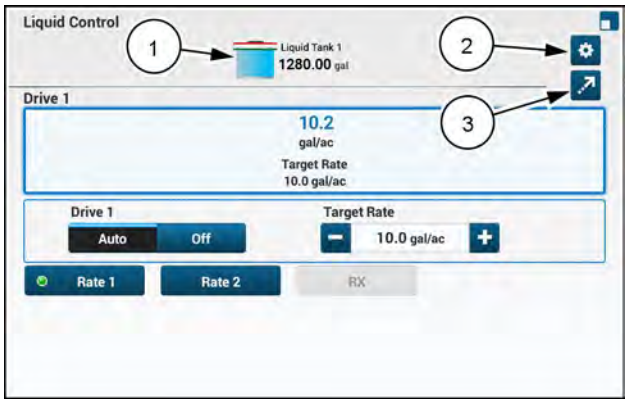
Monitoring the virtual tanks

Use the “Product Control” windows (2x6 size only) added to your run screens to monitor your virtual tank level.

The example shown here shows the “Liquid Control 2x6” window with the configured virtual tank **(1)**.

Press the “gear” icon **(2)** to access the “Tank Display Settings” window.

Press the button **(3)** to open the “Virtual Tanks” window. See the subsection “Virtual tank adjustments” above for information about the “Virtual Tanks” window.

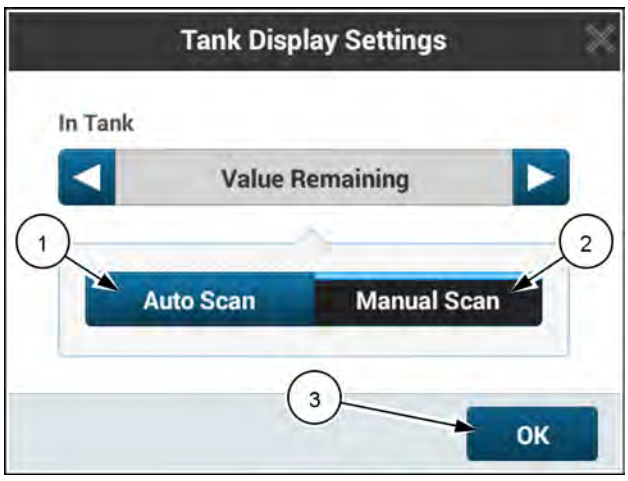


NHPH24PLM0455AA 8

The “Tank Display Settings” window gives a selection for auto scan **(1)** or manual scan **(2)**.

- In manual scan, you can select for the product control window to display either the value (measured product) in the tank, or the percentage of product left in the tank.
- In auto scan, the product control window will cycle between the value and the percentage of product left in the tank.

Press the “OK” button **(3)** to accept your selection.



RAPH23PLM1202BA 9

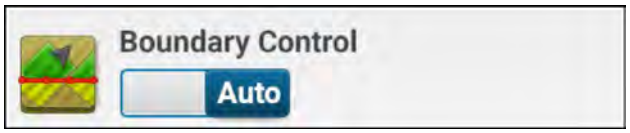
Set boundary and overlap controls

Turn automatic boundary and overlap controls on/off

NOTE: *If needed, use the "Layout" screens to add the "Boundary Control" window to a run screen.*

Use the "Boundary Control" window added to a run screen to turn automatic boundary control on and off.

In the "Boundary Control" window, press the "OFF" button to turn on automatic boundary control, or press the "Auto" button to turn off automatic overlap control.

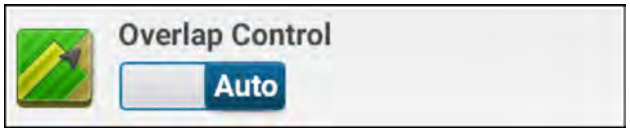


NHIL20PLM0073AA 1

NOTE: *If needed, use the "Layout" screens to add the "Overlap Control" window to a run screen.*

Use the "Overlap Control" window added to a run screen to turn automatic overlap control on and off.

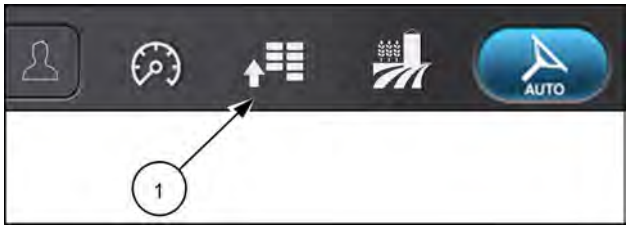
In the "Overlap Control" window, press the "OFF" button to turn on automatic overlap control, or press the "Auto" button to turn off automatic overlap control.



NHIL20PLM0074AA 2

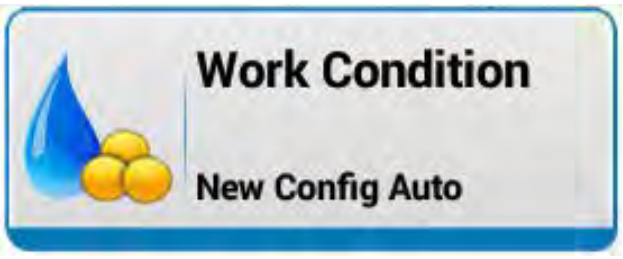
Automatic boundary and overlap control setup options

To access the setup options for boundary and overlap control, press the button **(1)** on the top bar to navigate to the "Menu" screen. Press the "Settings" tab, if necessary.



RAIL19PLM0121AA 3

Press the "Work Condition" card.



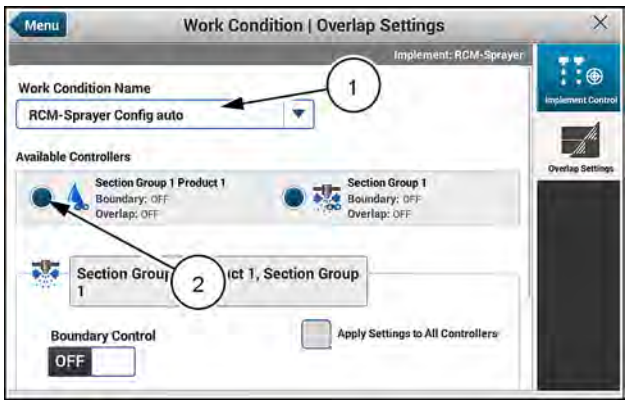
NHIL20PLM0384AA 4

Press the "Overlap Settings" button in the "Work Condition" card. The "Product Card / Overlap Settings" window appears.

The boundary and overlap settings are stored in the work condition configuration **(1)**. Create a new work condition if you intend to make changes on this screen but wish to preserve the former settings.

The available application controllers are shown. Press the radio button **(2)** next to the controller to configure the boundary and overlap settings for that controller.

NOTE: *When the system detects an ISOBUS controller such as a* ***Raven™*** *node, it selects the detected controllers for you.*

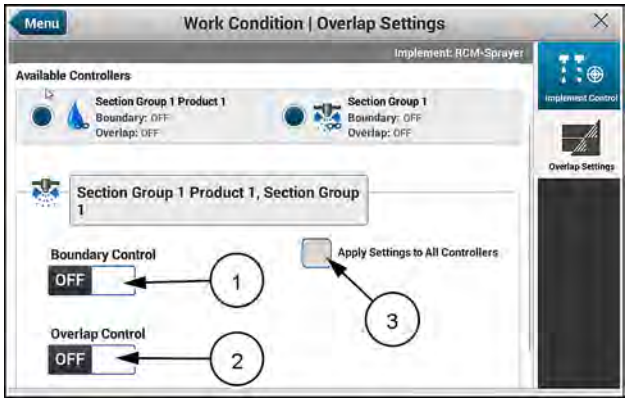


RAPH21PLM1351AA 5

Press the button **(1)** to enable automatic boundary control.

Press the button **(2)** to enable automatic overlap control.

Press the “Apply Setting to All Controllers” check box **(3)** to use these boundary settings in all of the controllers in the applicator.

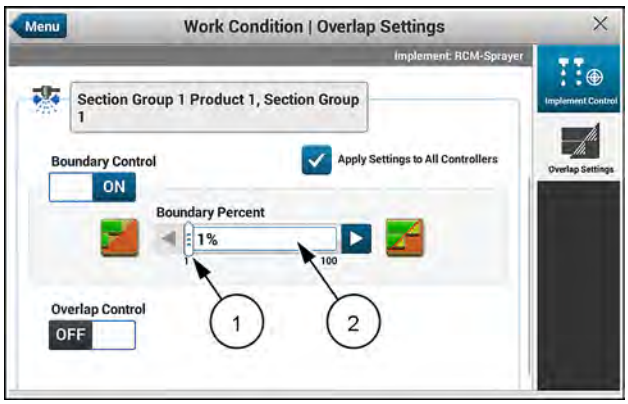


RAPH21PLM1350AA 6

Boundary control setup

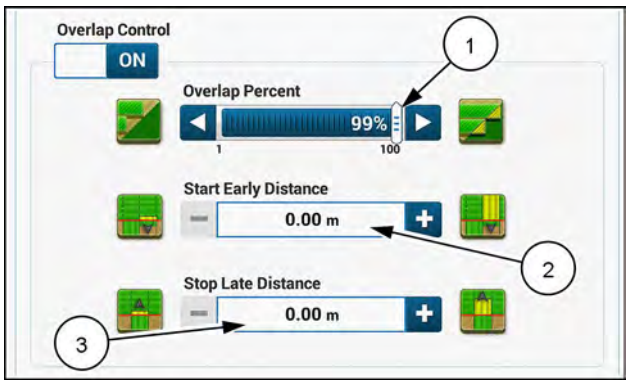
Boundary control uses field boundary data that is imported or recorded on the display to turn sections ON when you enter the field boundary or OFF when you exit the field boundary.

Use the slider **(1)** to set the percentage of each individual section width that crosses the boundary. When the defined percentage of the individual section is outside of the boundary, that section will turn off. Use the left and right arrows to fine tune the adjustment, if necessary. If you wish to define a value, press and hold the value field **(2)** and use the keypad to input the value.



RAPH21PLM1352AA 7

Overlap control setup



RAPH21PLM1353AA 8

Overlap control uses the coverage map for the field to determine when vehicle sections are crossing an area of the field where product application has already occurred. The appropriate applicator section or sections are turned OFF as the applicator enters an applied area and turned ON again if the applicator travels into an area where no product application has occurred.

Use the slider **(1)** to adjust the “Overlap Percent” setting. This configures how much overlap must be present before a section or sections are turned OFF.

Before adjusting the start early or stop late distance, make sure that:

- The location of the GNSS receiver is correct on the “Measurements” screen (**4-52**) of the GNSS setup card.
- The applicator measurements, particularly the bar distance, is correct on the “Applicator measurements” screen (**4-67**) of the applicator setup card.

  NOTE: *Do not adjust the start early or stop late distance until you confirm that the receiver and applicator measurements are correct.*

Use the “Start Early Distance” setting **(2)** to change the default setting for when the product drives are started relative to the applied field area. In general, this is the time it takes for a product to move from the nozzle to the ground.

Long-press the “Start Early Distance” field to open a keypad and enter a value. Use the left and right arrows to fine tune the adjustment, if necessary. If the product drives are starting before the applicator leaves the field area where application has already occurred, decrease the value. If they are starting after they leave an applied area, increase the value.

Use the “Stop Late Distance” setting **(3)** to change the default setting for when the product drives are stopped when entering an applied area. Long press the “Stop Late Distance” field to open a keypad and enter a value. Use the left and right arrows to fine tune the adjustment, if necessary. If the product drives are stopping before they enter the field area where product application has already occurred, increase the value. If they stop after they enter an applied area, decrease the value.

Precision farming: Work maps and layers

Introduction

This chapter explains how to use maps and map tools for data logging on the run screens.

Work maps show the results for the current operation.

Layers are components of work maps that denote specific components of an operation. If one layer covers parts of other layers, the display retains the information in the covered areas. You can alter the sequence of the layers and their characteristics. You can think of map layers as transparencies stacked together to make a composite image.

Map layers

Work maps vary with the farming application:

- Coverage maps show the work path of the vehicle or applicator through the field during the current operation.
- Application maps show the “as applied” rate for the product – as the vehicle and applicator move through the field.
- Prescription maps show the prescribed rate of product application in the field or sections of the field.
- Performance maps show an aspect of vehicle productivity – for example, fuel economy – as the vehicle moves through the field.

NOTE: *Displaying layers requires GNSS position with an estimated accuracy of at least* ***300 cm*** *(****118 in****).*

All layers that are saved against the selected task are available for viewing.

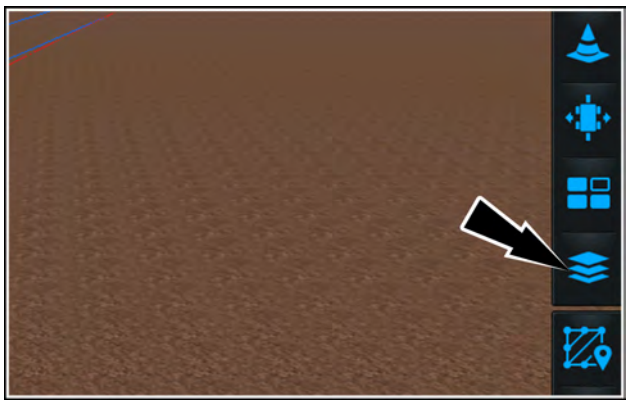
The work status icon on the top bar indicates that the vehicle work switch is engaged, the applicator is in the work state, and data logging is enabled. When this icon is present, your coverage map or application map is generating and saving to a map layer.

Use the “Layers” menu to select or change the active map layer.

NOTE: *Alternatively, swipe down on the map with three fingers to switch map layers.*

NOTE: *You can configure armrest buttons to scroll through map layers. See “Sprayer card configurable controls” (****3-23****).*

Press the “Layers” icon. The “Layers” menu appears.



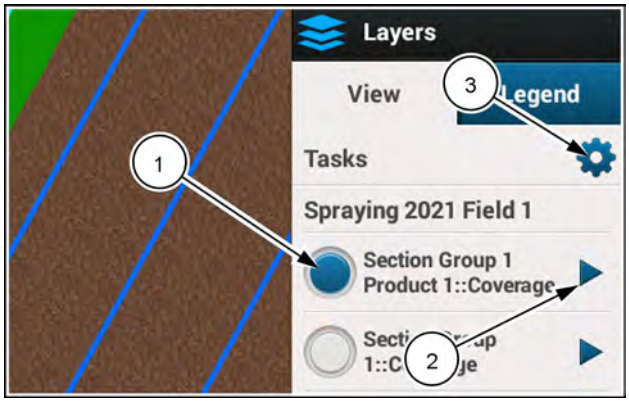
NHIL20PLM1782BA 1

Use the “View” tab to select your map layer, filter map layers, or change the layer color scheme.

Press the radio button **(1)** to select the active layer. The

Press the right arrow button **(2)** to access additional options for the map layer. For more information, see “Editing map layers” (**5-202**).

Press the “gear” button **(3)** to access the list of all of the map layers



RAPH21PLM1357AA 2

Press the button **(1)** to expand the list of map layers for the selected task.

Use the check boxes to select or deselect the layers from the list. Only the selected layers from this screen will display on the “View” tab.

Press the “Apply” button to accept the changes.

NOTE: *You can only select 10 layers at a time.*

RAPH21PLM1356AA 3

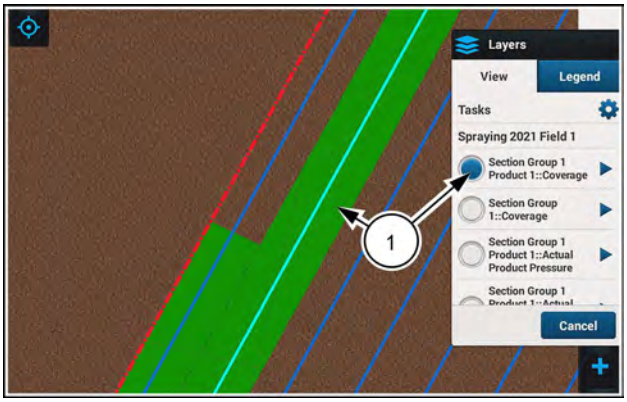
Coverage maps

Coverage maps are generated by operations that include a vehicle/applicator combination. Coverage maps show only the area worked in the field with no other data logged.

Coverage layers can show overlaps and gaps in field coverage. An overlap appears as a darker shade of the coverage area.

A gap in coverage appears as gap that is the same color as the background color.

The coverage layers **(1)**, appear monochrome on the map. The only changes in tone are for showing overlaps.

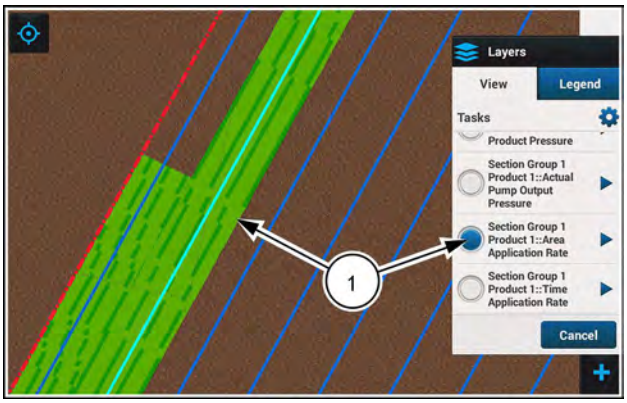


RAPH21PLM1355AA 4

Application maps

Application maps are used to visualize as-applied data as you operate in the field.

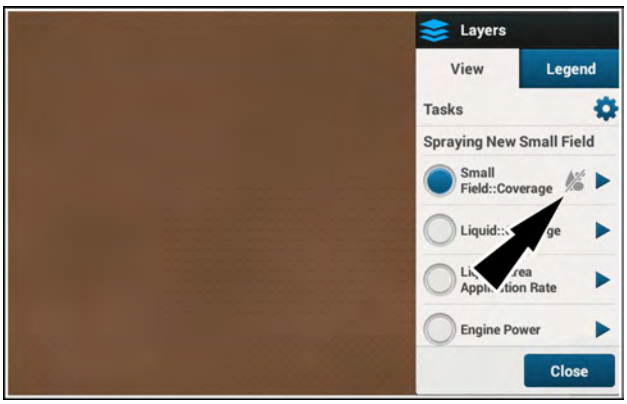
The specific tasks depend on the type of ISOBUS implement that you operate with.



RAPH21PLM1354AA 5

Disabled controller

A disabled icon appears in layers that are associated with a controller that is disabled.

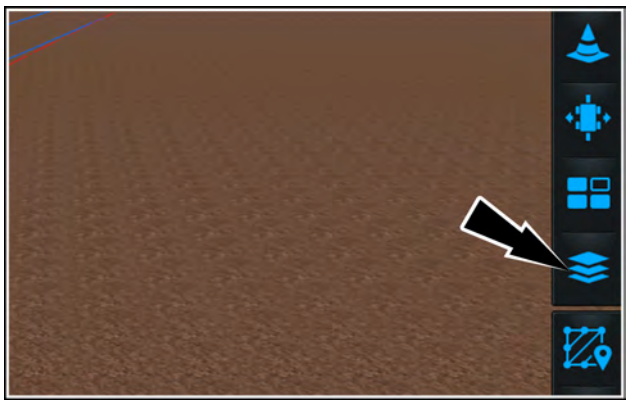


RAPH23PLM0200AA 6

Editing map layers

You can use the “Layers” menu to manage your layers.

Press the “Layers” icon. The “Layers” menu appears.

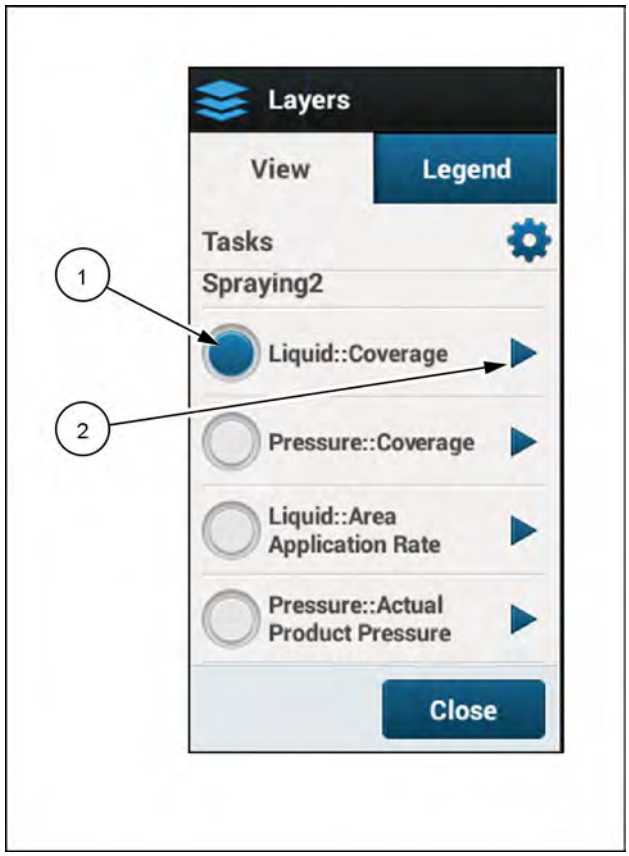


NHIL20PLM1782BA 1

Press the radio button **(1)** to select the active layer.

Press the arrow **(2)** next to the title of any available layer to open the edit panel for the individual layer.

NOTE: *Any edits to individual layers appear in all other map windows.*



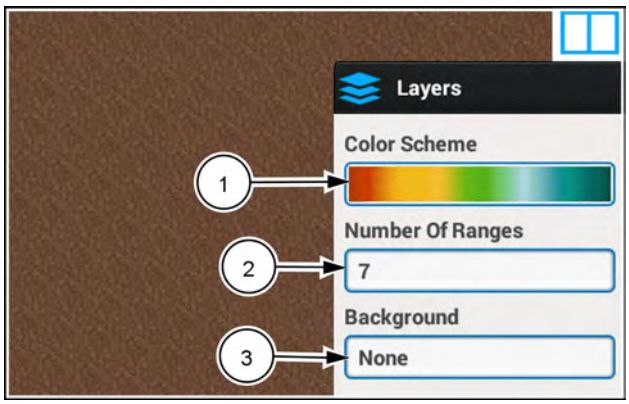
RAPH23PLM1204BA 2

Some layer types allow you to configure the color selection.

Press the “Color Scheme” selection box **(1)** to change the color scheme of the layer. See Figure **4**.

Press the “Number of Ranges” selection box **(2)** to adjust the scale of the color scheme. See Figure **4**.

Press the “Background” selection box **(3)** to overlay the active map layer onto another task, prescription map, or variety map. See Figure **4**.



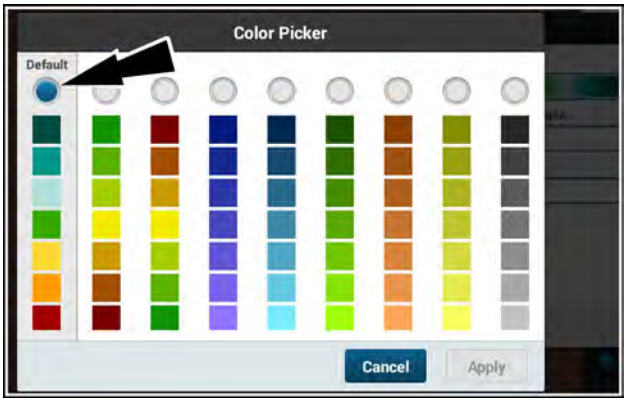
NHIL20PLM1783BA 3

Layer color scheme

In some layer types, you can change the color scheme of a layer, or use the default.

Press the radio button above the desired color scheme to select that color scheme

Press the “Apply” button to save the changes.



NHIL20PLM1784AA 4

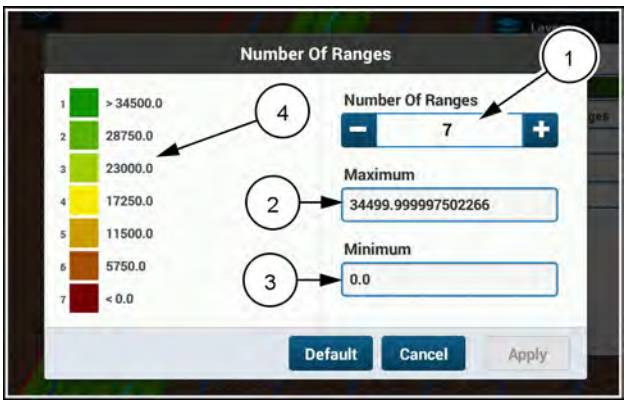
Layer number of ranges

Press the plus or minus button to adjust the Number of Ranges value **(1)**. Each map layer supports up to a maximum of 12 ranges.

Press the “Maximum” window **(2)** to set the maximum value for the range.

Press the “Minimum” window **(3)** to set the minimum value for the range.

As you adjust the values, the scale **(4)** automatically updates. Press the “Apply” button to save the changes.



NHIL20PLM0444AA 5

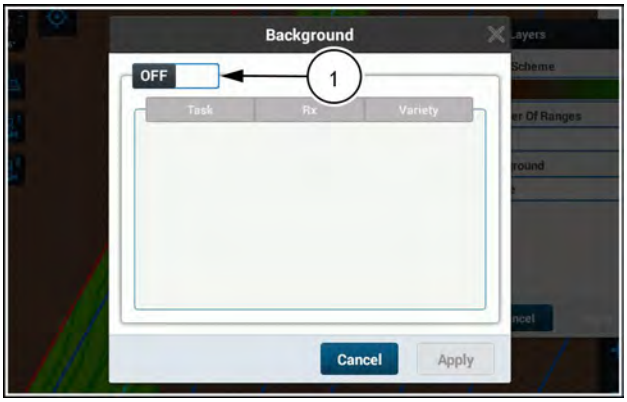
Backgrounds

You can set up a background for the selected map layer, however, you can only link one background to each layer.

Press the button **(1)** to turn the background on.

Select the type of background that you wish to use:

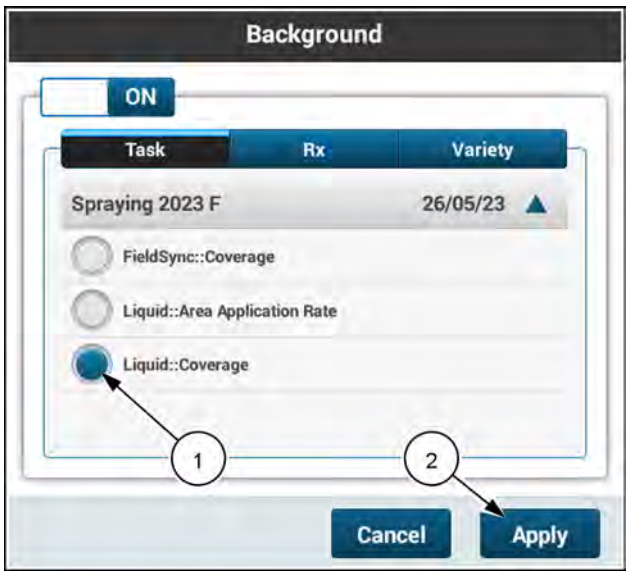
- Task
- Rx (prescription map)
- Variety



NHIL20PLM0447AA 6

Upon selection, the available options are shown. Select your desired background **(1)** and press the “Apply” button **(2)**.

The selected background will show



RAPH23PLM1203BA 7

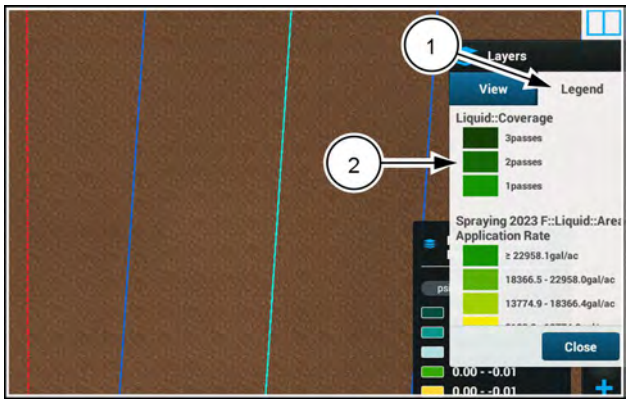
“Legend” tab

The “Legend” tab **(1)** in the “Layers” menu provides read-only color information about the selected layers.

The layer range **(2)** appears.

As you three-finger swipe through different layers, the information in the “Legend” tab updates. Give the update a few seconds after a three-finger swipe.

An empty color block appears and the values read “0.00” if there are no active layers or no information to be displayed.



RAPH23PLM0302AA 8

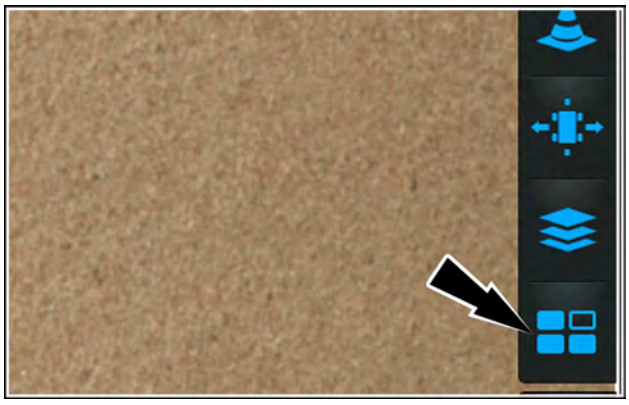
Legend widget

The “Legend” widget provides information about the colors in the selected map layer.

NOTE: *The Legend widget is only available in the 2x6 and 1x6 3D map.*

Access the 3D map window from a run screen.

On the right-hand menu, press the “Widgets” icon.



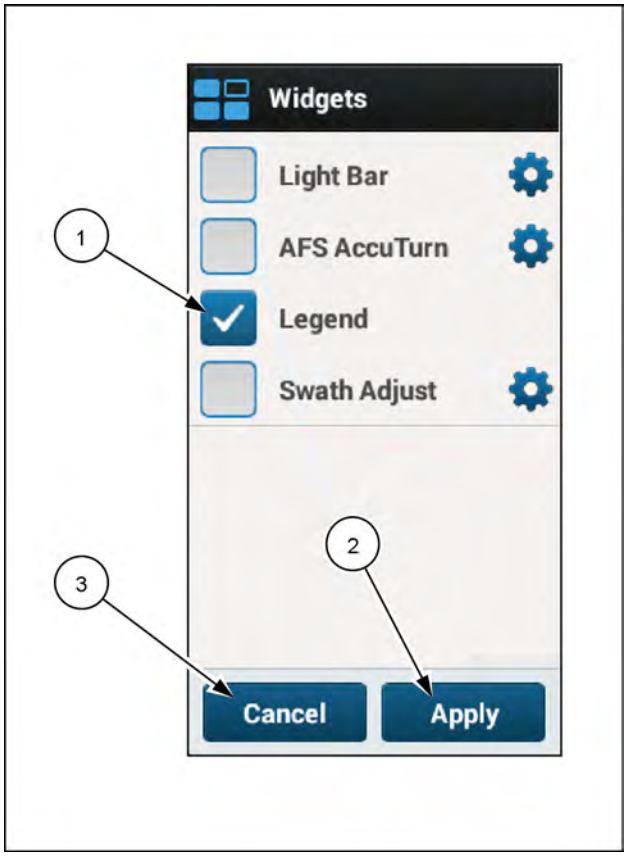
NHIL20PLM0049AA 9

The “Widgets” menu appears.

Press the check box **(1)** to select the “Legend” menu item.

Press the “Apply” button **(2)** to accept your widget selection.

Press the “Cancel” button **(3)** to discard your widget changes and close the “Widgets” menu.



RAPH22PLM0924BA 10

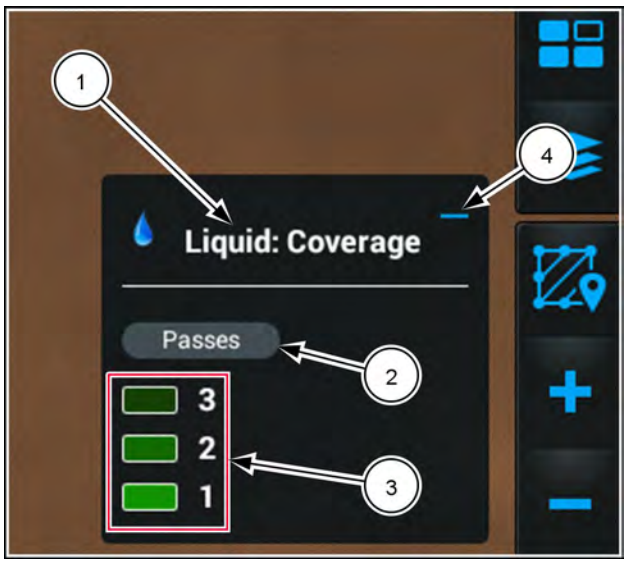
The “Legend” widget appears.

The “Legend” widget provides the following information about the selected layer:

- The name **(1)** of the selected layer
- The units of measure **(2)**
- The range **(3)** of the units represented by each color in the map

You can minimize the “Legend” widget to uncover most of its area on the map.

Press the minimize icon **(4)** if you wish to minimize the “Legend” widget.



RAPH23PLM1205BA 11

If there are no products assigned, the “Legends” widget states, “No product assigned. To view information, assign a product in Operations.”

See “Assign controllers and adjust rates or targets” (**5-185**).

RAPH22PLM0925BA 12

The minimized “Legends” widget remains visible in the map, with only the name of the selected layer.

Press the expand icon if you wish to expand the “Legend” widget.

RAPH23PLM0304AA 13

NOTE: *If there are no assigned products, the minimized “Legend” widget states, “Legends.”*

Productivity and reporting

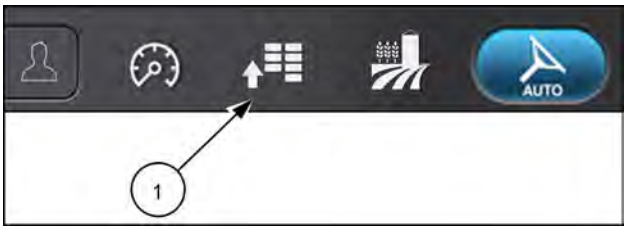
Productivity reports

Productivity reports generated by the display give you the ability to evaluate the performance of your machines and your fields. Generating a productivity report allows you to see summary and totals calculations from the display for the given filters defined in your templates.

Only administrative users can modify and create up to ten customized template configurations.

The display gives you lists of selectable items for customizing your templates. When making a customized template, proceed through a process in which you select the filters for that data that you include in the template.

To access productivity reports, press the button **(1)** on the top bar to navigate to the “Menu” screen.



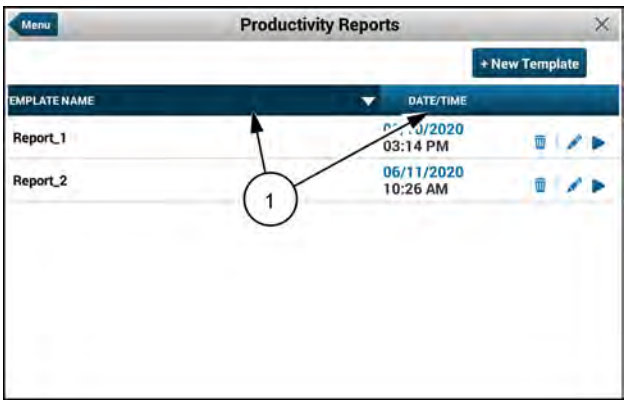
RAIL19PLM0121AA 1

Press the “Productivity” tab **(1)**.

Press the “Productivity Reports” card **(2)** to open the “Productivity Reports” screen.

RAIL18PLM0263AA 2

You can sort the templates by name, or by the date and time columns. Press the applicable column header **(1)** to sort the templates.

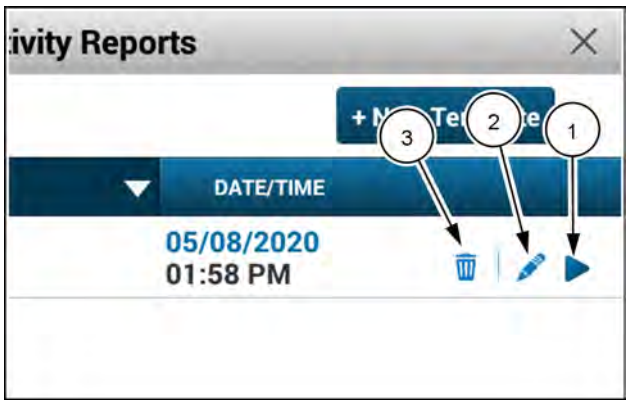


NHIL20PLM0813AA 3

Generate report from a template

Press the “generate report” button **(1)** to generate a report based on the criteria for the selected template.

The report output that appears contains the information compiled from the display based on the selected filters of the template.



NHIL20PLM0699AA 4

Edit an existing template

NOTE: *Only administrative users of the display can edit a template.*

You can edit any default template or existing customized template by pressing the “edit” button **(2)**.

Editing a default template creates a new customized template that starts with the configurations of the default template.

Editing an existing customized template gives you the option to change the existing customized template or make a new customized template.

Delete a template

NOTE: *Only administrative users of the display can delete a customized template.*

You can delete a customized template that you no longer need, or if you have the maximum number of customized templates and need to make another template.

To delete a customized template, press the “delete” button **(3)**.

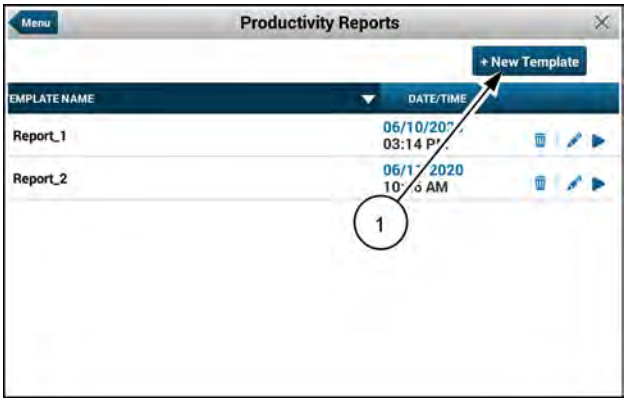
NOTE: *If you delete a customized template and then confirm the deletion, you cannot recover the template.*

Add a new customized template

NOTE: *Only administrative users of the display can create customized templates.*

Press the “+ New Template” button **(1)** to create a new customized template.

Unless you are exceeding the maximum number of customized templates, the “Name Productivity Template” window appears.



NHIL20PLM0813AA 5

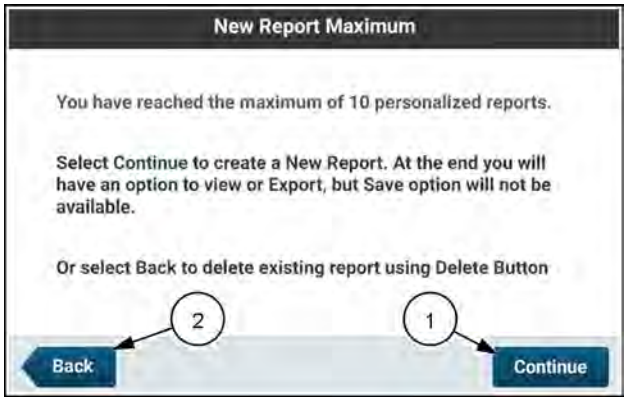
You have the ability to make up to ten customized templates.

If there are already ten customized templates, pressing the “New Template” button will cause the pop-up window to appear.

The pop-up window states that you can continue to make a new customized template, however, you can only view or export the new template. You cannot save the new template. You also have the option to go back to the “Productivity Reports” screen and delete an existing template to make room for a new template.

Press the “Continue” button **(1)** to make a new template that you can view or export, but not save.

Press the “Back” button **(2)** to close the “New Report Maximum” window.



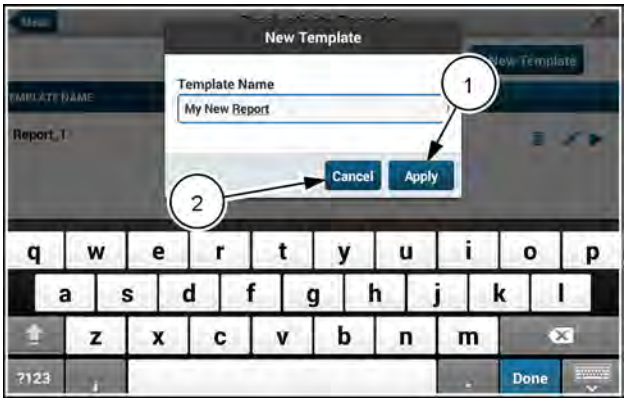
RAIL18PLM0267AA 6

In the “Template Name” window, you can accept the default name or rename the customized template. To rename the customized template, press the editing field.

Use the keypad to name the customized template as needed.

Press the “Apply” button **(1)** to apply your changes and close the keypad.

Press the “Cancel” button **(2)** to discard your changes and return to the “Productivity Reports” window.



RAPH21PLM1158AA 7

The filter selection windows that appear after you press the “New Template” button guide you through the process of making a customized template.

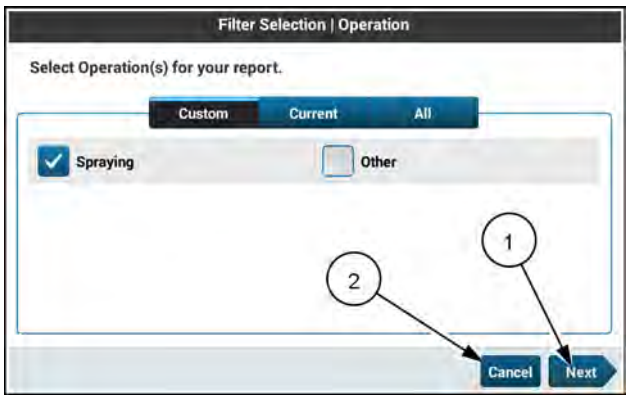
Select the operations for the template. The operations that can appear depend upon the operations that are valid on the machine and that you have performed.

The available operations are available for selection:

- Custom – Select the desired operations by checking check boxes.
- Current – Use the current operation at the time you are generating the report.
- All – Select all operations.

Press the “Next” button **(1)** to accept your selections and proceed to the next filter.

Press the “Cancel” button **(2)** to discard your selections. The “Cancel Filter Selection” window appears.



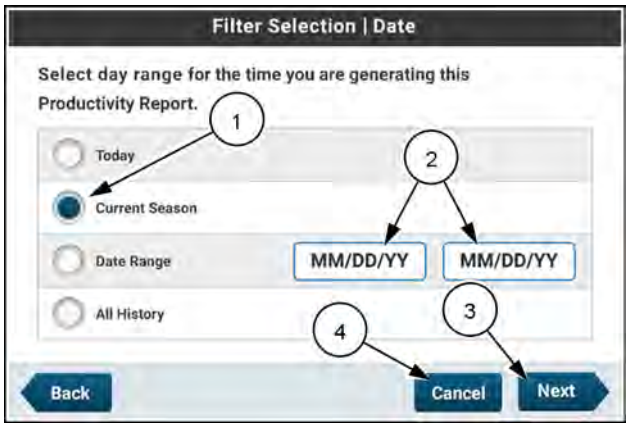
RAPH23PLM1210BA 8

Select the date for the template.

Press a radio button **(1)** to select the desired date option: Today, Current Season, Date Range, or All History. If you wish your template to cover a date range, select the “Date Range” option and press the date range fields **(2)** to define the date range.

Press the “Next” button **(3)** to accept your selections and proceed to the next filter.

Press the “Cancel” button **(4)** to discard your selections, or press the “Back” button to return to the previous filter selection.

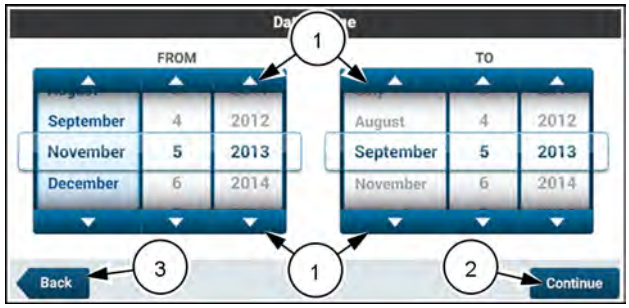


RAIL18PLM1405BA 9

If you elected to define a date range for the template, press the up arrows or down arrows **(1)** to select the beginning (“From”) and ending (“To”) dates of the template.

Press the “Continue” button **(2)** to accept your date range selection and proceed to the next filter.

Press the “Back” button **(3)** to discard your date range selection and return to the “Filter Selection/Date” window.



RAIL18PLM0271AA 10

Select your grower, farm, field, and task (GFFT). The available options are:

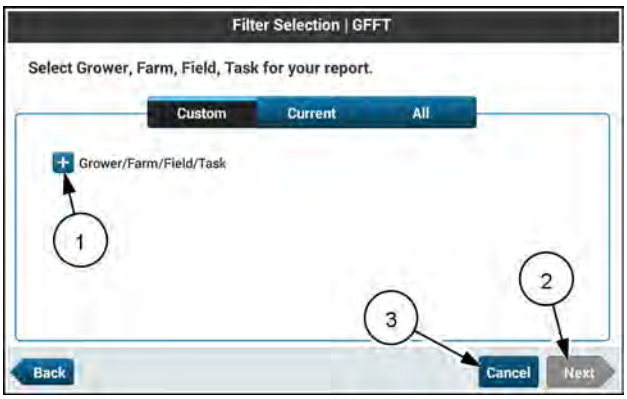
- Custom – Select the desired GFFT by checking check boxes.
- Current – Use the current GFFT at the time you are generating the report.
- All – Select all applicable GFFT.

The Custom option includes a menu hierarchy **(1)** in which you can expand and select one or multiple sets for the template.

Press the upper level “Grower / Farm / Field / Task” selection to select all desired items for the report.

Press the activated “Next” button **(2)** to accept your selections and proceed to the next filter.

Press the “Cancel” button **(3)** to discard your selections, or press the “Back” button to return to the previous filter selection.



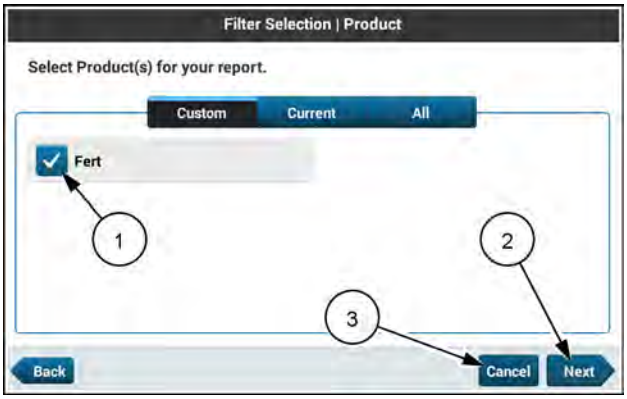
RAPH23PLM1211BA 11

Select your product. The available options are:

- Custom – Select the products by pressing the check boxes **(1)**.
- Current – Select the product that is active at the time you generate the report.
- All – Select all applicable products.

Press the “Next” button **(2)** to accept your selections and proceed to the next filter.

Press the “Cancel” button **(3)** to discard your selections, or press the “Back” button to return to the previous filter selection.



RAPH23PLM1212BA 12

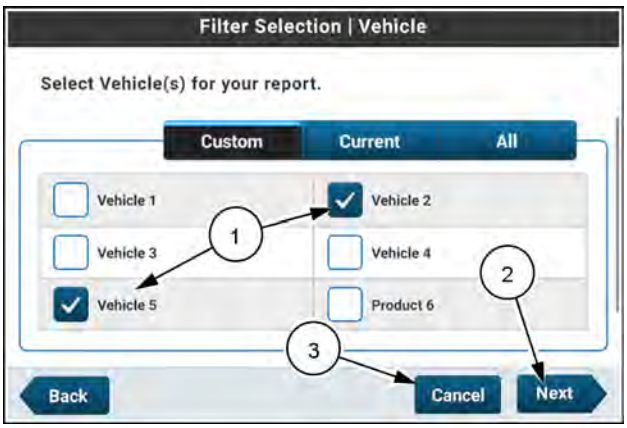
Select the vehicle for the template. This filter is particularly useful when you need to generate a vehicle performance template.

The “Custom” option provides check boxes to selected the desired vehicles. The “Current” and “All” options give information about those options.

With the “Custom” option selected, press the check boxes **(1)** to select the desired vehicles.

Press the “Next” button **(2)** to accept your selections and proceed to the next filter.

Press the “Cancel” button **(3)** to discard your selections, or press the “Back” button to return to the previous filter selection.



RAPH23PLM1213BA 13

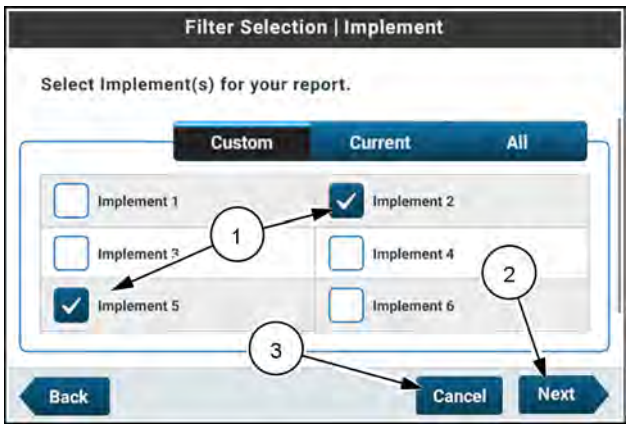
Select the implement for the template. This filter is useful when you wish to generate templates on productivity with specific implements.

The “Custom” option provides check boxes to selected the desired implements. The “Current” and “All” options give information about those options.

With the “Custom” option selected, press the check boxes **(1)** to select the desired implements.

Press the “Next” button **(2)** to accept your selections and proceed to the next filter.

Press the “Cancel” button **(3)** to discard your selections, or press the “Back” button to return to the previous filter selection.



RAPH23PLM1214BA 14

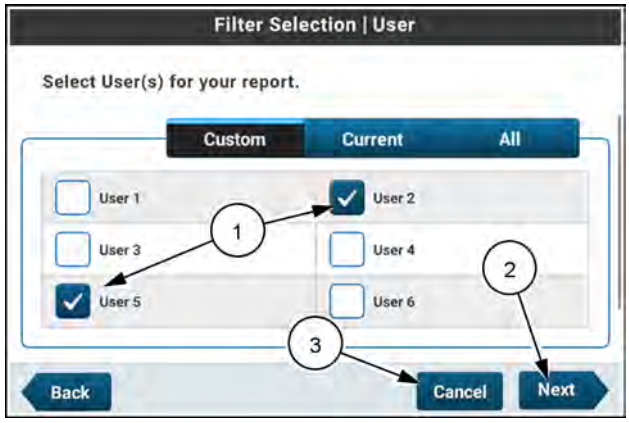
Select the user for the template. You can use this filter to narrow your template to a particular operator.

The “Custom” option provides check boxes to selected the desired users. The “Current” and “All” options give information about those options.

With the “Custom” option selected, press the check boxes **(1)** to select the desired users.

Press the “Next” button **(2)** to accept your selections and proceed to the next filter.

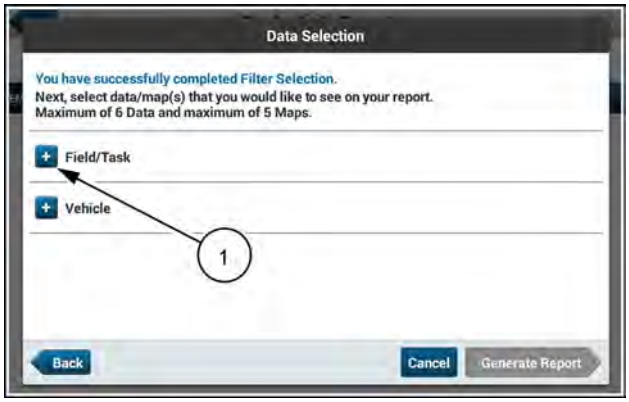
Press the “Cancel” button **(3)** to discard your selections, or press the “Back” button to return to the previous filter selection.



RAPH23PLM1215BA 15

Select the data that you wish to include in the report. This window provides a list of summary data and totals that you can select for your customized template.

Press the expand button **(1)** to see the list of all parameters for each desired category. You can then select data or maps (if available) for each parameter by pressing the check boxes. Not every parameter has a map available.

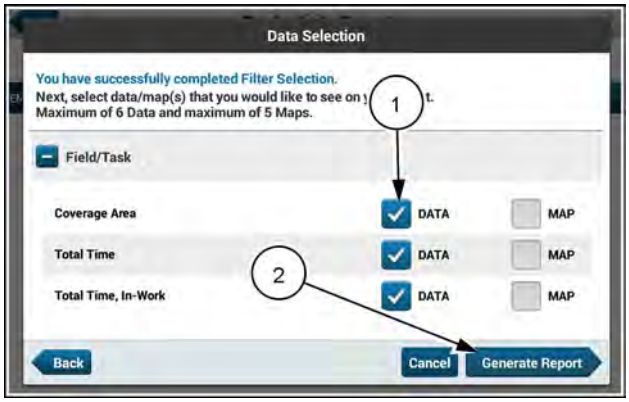


NHIL20PLM0695AA 16

Select the desired parameters from the expanded menus by pressing the check box **(1)**.

NOTE: *A maximum of six data parameters and five maps are available for selection.*

When your data selections are complete, press the “Generate Report” button **(2)**.



NHIL20PLM0696AA 17

The report output that appears contains the information compiled from the display based on the selected filters of the template. The report then gives the categories, the map, and the data you selected. In most cases, you will need to scroll the report to see all of the information.

When you save the report, you save the configuration that you programmed in the steps above as a customized template that appears on the “Productivity Reports” screen.

NOTE: *If you generated the report using the “New Report” button, you can only save the report. If you generated the report using the “Edit” button of an existing customized report, you can save the report or “save as” a new copy of the report.*

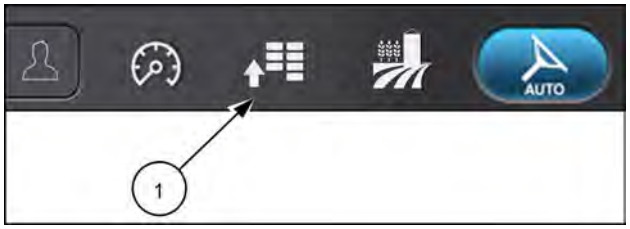
RAPH23PLM1216BA 18

Applicator totals

The “Applicator Totals” screen provides details on all of the data that is logged during work in the selected task, as reported by the task controller. Totals are reported for the selected applicator that utilizes the task controller. The values shown on this screen are updated every 30 seconds.

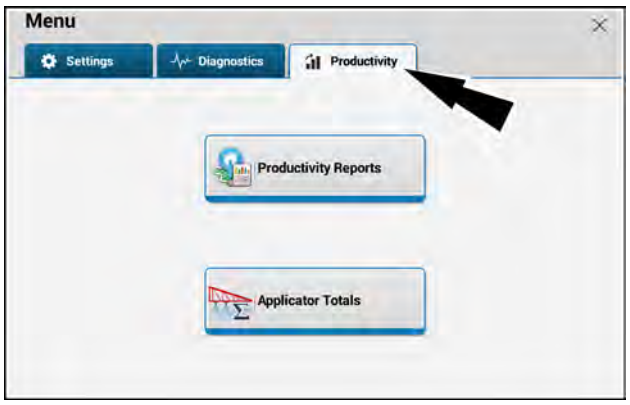
NOTE: *Applicator totals requires the task controller activation.*

To access the “Applicator Totals” screen, press the button **(1)** on the top bar to navigate to the “Menu” screen.



RAIL19PLM0121AA 1

Press the “Productivity” tab **(1)**.



RAPH21PLM1155AA 2

Press the “Applicators Totals” card **(2)**.

RAPH21PLM1156AA 3

A section **(1)** for the selected applicator is shown. Detailed information for each controller is listed, as reported by the task controller.

RAPH21PLM1157AA 4

6 - TROUBLESHOOTING

Introduction

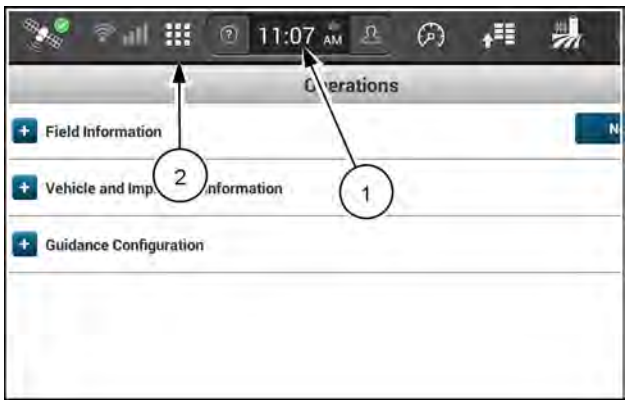
Display screen captures

Performing a screen capture (or “screenshot”) of the current display layout may assist you or your CASE IH dealer in resolving the fault or error condition.

To take a display screen capture, press and hold your finger on the clock **(1)** on the top bar. After approximately three seconds in some software builds, the screen will flash gray and the screen capture will be captured and stored in the gallery.

To access the screen capture, press the “View Screenshot” button on the pop-up window after performing a screen capture. Alternatively, press the “applications” button **(2)** on the top bar.

Press the “Gallery” application **(1)** to open up the gallery.



NHIL20PLM0819AA 1

RAPH21PLM1246AA 2

Press the image **(1)** to view the screen capture in an enlarged window.

Press the check box **(2)** to select the screen capture before performing an action.

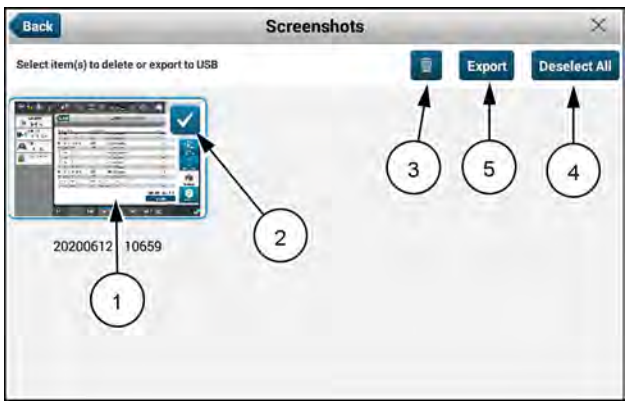
Press the “delete” button **(3)** and confirm the deletion prompt pop-up window to delete the selected screen capture from the display.

Press the “Select All” or “De-Select All” button **(4)** to select or de-select all of the screen captures visible in the gallery. selecting or de-selecting all screen captures will only select the six screen captures that are shown.

Press the “Export” button **(5)** and confirm the export prompt pop-up window to export the selected screen captures to the .\screen captures\ directory on the inserted USB memory device.

NOTE: *A USB memory device is required to export screen captures from the display.*

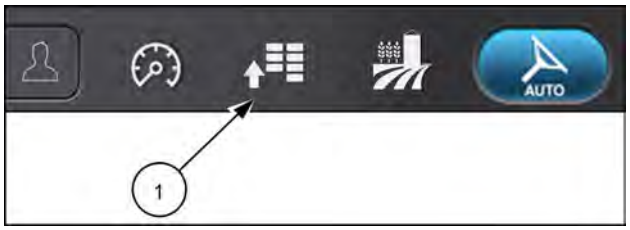
NOTE: *Exporting screen captures to a USB memory device will delete the screen captures from the display.*



NHIL20PLM0821AA 3

Check Controller Area Network (CAN) status and export display logs

The Controller Area Network (CAN) status and log export functions are available from separate tabs in the “System” card. To access the “System” card, press the button **(1)** on the top bar to navigate to the “Menu” screen. Press the “Settings” tab, if necessary.

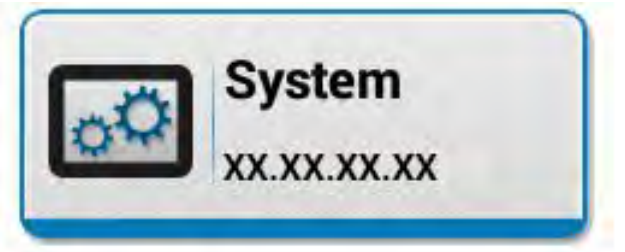


RAIL19PLM0121AA 1

“CAN Status”

NOTE: *Cards not covered in this section are covered in other sections of this manual or in your vehicle operators manual.*

Press the “System” card.



NHIL20PLM0828AA 2

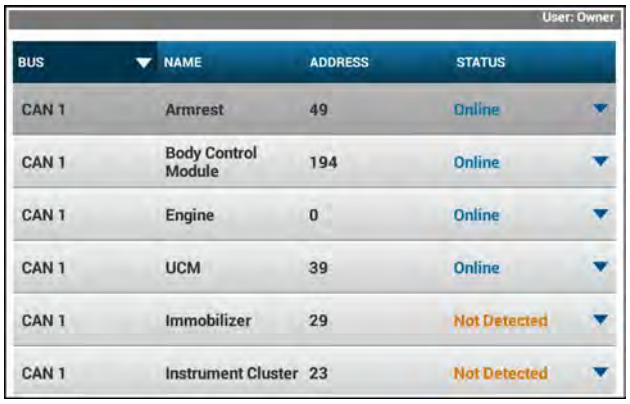
Press the CAN Status” tab. The “CAN Status” screen opens.

From the “CAN Status” screen, you can view information about the controllers that communicate with the display.

The information includes:

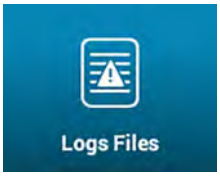
- CAN Bus number
- Controller name
- CAN address
- Controller status

Capturing the content on this screen during a fault condition may assist you or your CASE IH dealer in troubleshooting.

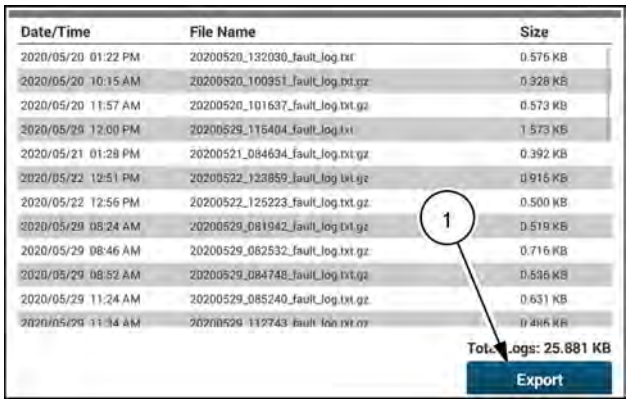


NHIL20PLM0826AA 3

“Log Files”



Press the “Logs Files” tab. The “Logs Files” screen opens.



NHIL20PLM0827AA 4

Press the “Export” button **(1)** to export the stored logs for the display and the PCM to folders on the inserted USB memory device.

Allow the export to complete before powering off or removing the USB memory device.

The display logs are exported to several “.\<type>_logs\” directory (such as installer_logs or fault_logs), while the PCM logs are exported to the root directory of the USB memory device.

Press “Yes” **(1)** to continue with the PCM logs.

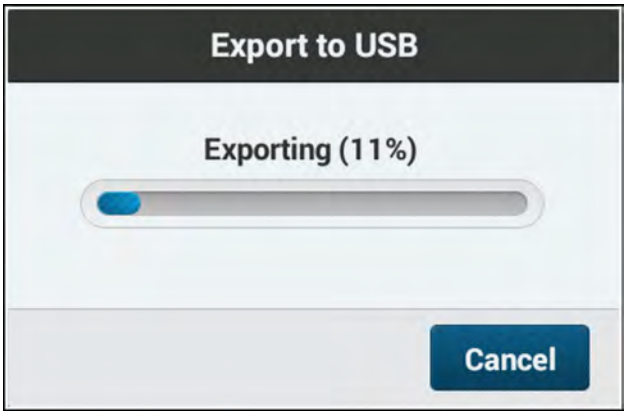
Press “No” **(2)** to continue without the PCM logs.

NHPH24PLM0169AA 5

The system will export the display log files first and then export the PCM log files.

Press “Cancel” at any time to discard the log file export.

NOTE: *Do not power OFF the vehicle during the log file export.*

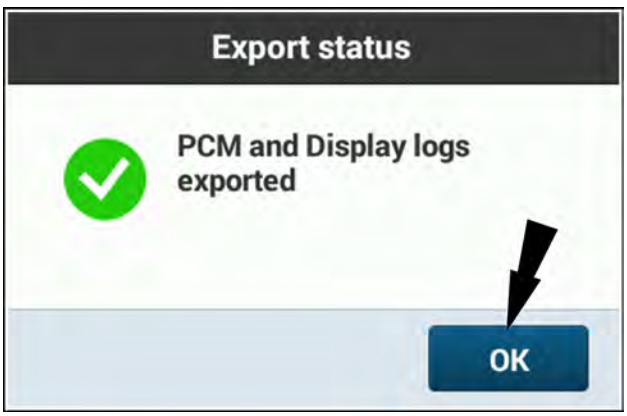


NHPH24PLM0170AA 6

NHPH24PLM0171AA 7

The PCM and display logs were exported sucessfully.

Press the “OK” button to confirm and exit.



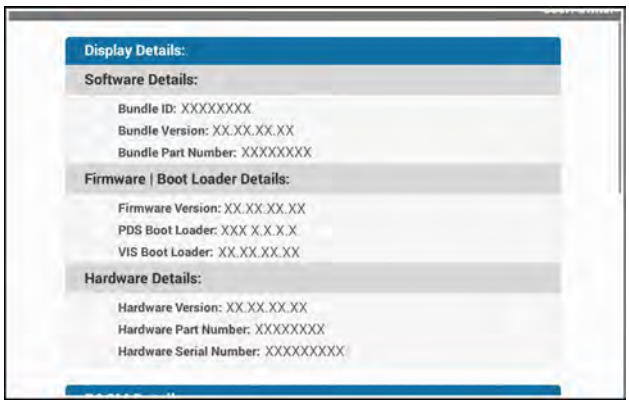
NHPH24PLM0172AA 8

View software versions

You may need to provide the software versions of the display, PCM, or GNSS receiver to your CASE IH dealer to assist in troubleshooting.

Press the “System Info” tab. The “System Info” screen opens.

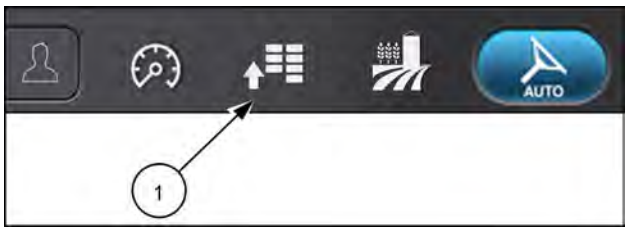
Scroll down on the “System Info” screen to view the software and hardware details of the display, PCM, and GNSS receiver.



NHIL20PLM0830AA 1

Machine diagnostics

Press the button **(1)** on the top bar to open the “Menu” screen.

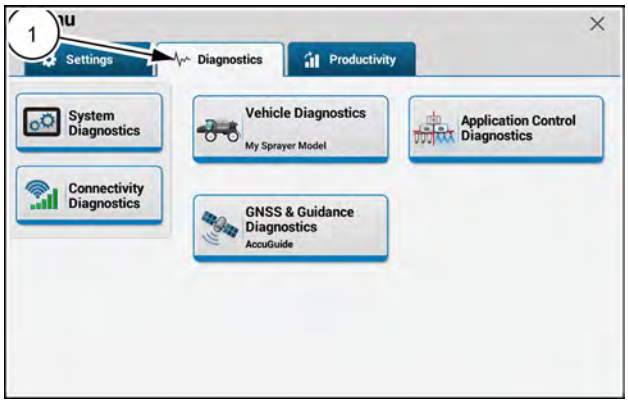


RAIL19PLM0121AA 1

Press the “Diagnostics” tab **(1)**.

Select one of the diagnostic cards to view additional information.

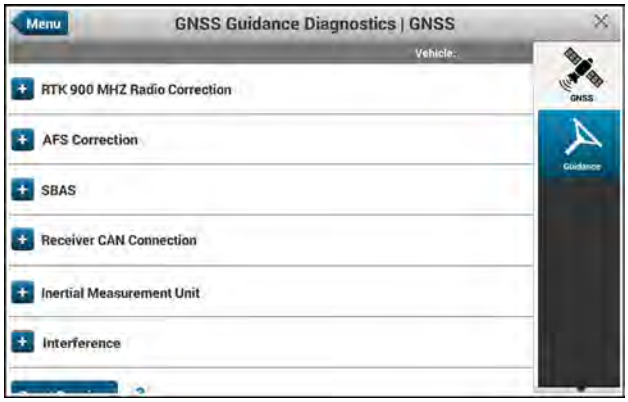
NOTE: *If the cards are grayed out, then the feature is either not available or you do not have the applicable activation. See “’Activations’ card” (**3-56**).*



RAPH21PLM1307AA 2

The “GNSS & Guidance Diagnostics” card is shown as an example. Each card can be composed of several collapsed menus inside one or more tabbed menus.

Icon	Function
	Expands a menu
	Collapses a menu

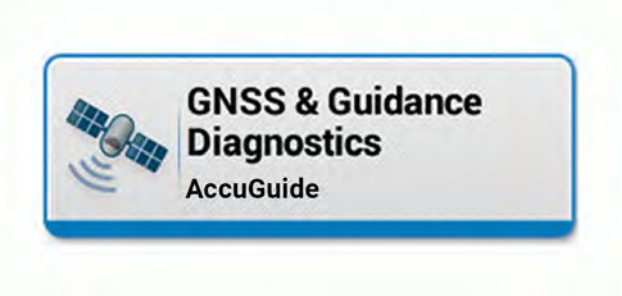


RAPH21PLM1359AA 3

“GNSS & Guidance” (diagnostics) card

Access the “GNSS & Guidance Diagnostics” card to obtain diagnostic information for:

- Global Navigation Satellite System (GNSS)
- Guidance



RAPH23PLM0434AA 4

"Connectivity Diagnostics” card

Access the "Connectivity Diagnostics” card to obtain diagnostic information for:

- Signal status and information
- Subscription information
- Telematics
- Cellular connectivity information

NHIL19PLM0610AA 5

“System Diagnostics” card

Access the “System Diagnostics” card to view the current network status of the ethernet circuit between the display and the Processing and Connectivity Module (PCM).

RAPH21PLM1125AA 6

“Application Control Diagnostics” card

Access the "Application Control Diagnostics” card to obtain diagnostic information for:

- the work control status.
- information about the current task.
- application control status.

RAPH21PLM1305AA 7

“Vehicle Diagnostics” card

For more information, see the vehicle operator’s manual.

RAPH21PLM1306AA 8

“ISOBUS” card (diagnostics)

Access the "Application Control Diagnostics” card to obtain diagnostic information for:

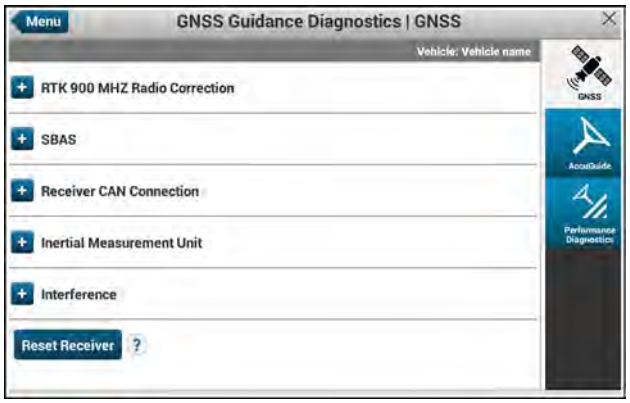
- Certifications
- Components
- File management

RAPH22PLM1721AA 9

"GNSS & Guidance Diagnostics"

"GNSS" screen

The status of each GNSS diagnostic component menu can be viewed in it its collapsed state. No icon or a green icon on the right side of the GNSS diagnostic component menu title indicates the component is in a normal state. A yellow or red icon on the right side of the collapsed GNSS diagnostic component menu indicates the diagnostic component requires attention.



NHIL22PLM0364AA 1

				No icon displayed
In process	Normal	Status is not within normal range	Additional attention required	Status is within normal range

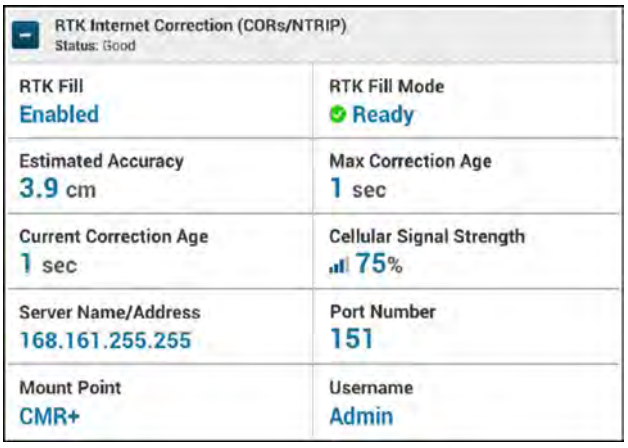
When expanded, a status menu provides additional statuses and information.

Status menu buttons

Button	Action when pressed
	Expands the GNSS diagnostic component menu. ***NOTE:*** *This button is only present when its GNSS diagnostic component menu is collapsed.*
	Collapses the GNSS diagnostic component menu. ***NOTE:*** *This button is only present when its GNSS diagnostic component menu is expanded.*

"RTK Internet Correction (NTRIP/RTK+)" menu

The "RTK Internet Correction" menu uses text color to communicate component status.



NHIL20PLM0772FA 2

NTRIP / RTK+ correction status messages

NTRIP Status	
NONE	All Fields Required – All the fields have to be correctly filled in for correction streaming to start. Contact NTRIP service administrator or dealer for subscription.
NONE	Initializing communication to server – Attempting to connect to server selected to obtain mount point list.
NONE	Logging into server – If condition persists, contact NTRIP service administrator or dealer.
	Connected to server and stream is being received – If RTK correction age is not low, check that the mount point is correct and correction type is supported.
	Error - Incorrect Mount Point entered – Re-select mount point with compatible correction as recommended by NTRIP service adminstrator and operator's manual. An RTCM correction is preferred, when available.
	Error - Login or Password not accepted by server – Re-check username and password from NTRIP service administrator or dealer.
	Server Error - IP Address/URL or Port number may be incorrect – Re-check server name and port number from NTRIP service administrator or dealer.
	Error - No active NTRIP subscription assigned – Contact NTRIP service administrator or dealer.
	Session Lost - Stream interrupted, attempting to reconnect – Cellular service may be poor. If possible, move to area with better reception.
	Initializing - Requesting Mount Point List – Communication with server must be established before mount point can be selected from list and setup completed.
	No Cellular Network Detected – Corrections cannot be received without cellular reception.

"RTK Fill"

- Enabled – The RTK Fill mode is enabled. The "RTK Fill Mode" cell gives the system status.
- Disabled – The RTK Fill mode is disabled. The "RTK Fill Mode" cell reads "Inactive."

"RTK Fill Mode"

- Ready – RTK Fill mode is enabled and ready for use.
- Not Ready – RTK Fill mode registers as unavailable and cannot be used.
- Initializing – RTK Fill mode is newly in use, but full accuracy is not yet achieved.

  NOTE: *The most accurate operation of RTK Fill can only occur once the GNSS receiver initializes; this can take approximately 30 minutes. RTK Fill will automatically operate during an RTK outage before the GNSS receiver fully initializes, but with degraded accuracy. Only after the initialization can you expect minimal error drift, approximately* ***5 cm*** *(****2 in****).*

- In Use – RTK Fill mode is in use and working properly. "In Use" may either appear in blue or yellow text. Blue text indicates good accuracy. Yellow text indicates degraded accuracy.

"Estimated Accuracy"

The estimated accuracy, also shown alongside the "Accuracy versus Availability" setting, determines the GNSS status. The estimated accuracy is the threshold value used to indicate if autoguidance is available for engagement. When outside the threshold, autoguidance will not use this correction source for engagement. To adjust the threshold value up or down, go to the GNSS setup screen and adjust the "Availability versus Accuracy" slider. If autoguidance keeps disengaging, adjust the slider bar closer to "Availability".

"Max Correction Age"

The "Maximum Correction Age" field displays the maximum correction age recorded over the last **300 s** for the specific correction source.

"Current Correction Age"

The "Current Correction Age" field displays the time that has passed since the last message was communicated from the receiver. RTK correction age is typically less than three seconds, and the accuracy can suffer if the correction age is more than eight seconds.

"Cellular Signal Strength"

The "Cellular Signal Strength" field shows the current strength of your cellular signal. See "Connectivity status" (**3-35**).

“Server Name/Address”

The “Server Name/Address” field displays the server name and server address as entered in the “GNSS setup” screen.

“Port Number”

The “Port Number” field displays the server port number as entered in the “GNSS setup” screen.

“Mount Point”

The “Mount Point” field displays the mount point as selected in the “GNSS setup” screen.

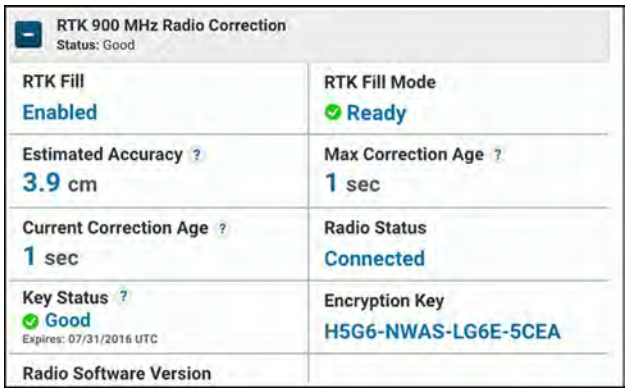
“Username”

The “Username” field displays your username as entered in the “GNSS setup” screen.

“RTK Radio Correction” menu

RTK radio statuses

Icon	Text Color	Status – Description
	Green	“Good” – Measurement is above the accepted range.
	Yellow	“Moderate” – Measurement is within accepted range.
	Red	Out-of-Range – Measurement is below accepted range.
NONE	Gray	Estimated accuracy is either exactly zero or not available.



RAPH22PLM1723AA 3

Vehicle operating with the **900 MHz** Real-Time Kinematic (RTK) radio shown

“RTK Fill”

- Enabled – The RTK Fill mode is enabled. The “RTK Fill Mode” cell gives the system status.
- Disabled – The RTK Fill mode is disabled. The “RTK Fill Mode” cell reads “Inactive.”

“RTK Fill Mode”

- Ready – RTK Fill mode is enabled and ready for use.
- Not Ready – RTK Fill mode registers as unavailable and cannot be used.
- Initializing – RTK Fill mode is newly in use, but full accuracy is not yet achieved.

  NOTE: *The most accurate operation of RTK Fill can only occur once the GNSS receiver initializes; this can take approximately 30 minutes. RTK Fill will automatically operate during an RTK outage before the GNSS receiver fully initializes, but with degraded accuracy. Only after the initialization can you expect minimal error drift, approximately* ***5 cm*** *(****2 in****).*
- In Use – RTK Fill mode is in use and working properly. "In Use" may either appear in blue or yellow text. Blue text indicates good accuracy. Yellow text indicates degraded accuracy.

“Estimated Accuracy”

The estimated accuracy, also shown alongside the “Accuracy versus Availability” setting, determines the GNSS status. The estimated accuracy is the threshold value used to indicate if autoguidance is available for engagement. When outside the threshold, autoguidance will not use this correction source for engagement. To adjust the threshold value up or down, go to the GNSS setup screen and adjust the “Availability versus Accuracy” slider. If autoguidance keeps disengaging, adjust the slider bar closer to “Availability”.

“Max Correction Age”

The “Maximum Correction Age” field displays the maximum correction age recorded over the last **300 s** for the specific correction source.

“Current Correction Age”

The “Current Correction Age” field displays the time that has passed since the last message was communicated from the receiver. RTK correction age is typically less than three seconds, and the accuracy can suffer if the correction age is more than eight seconds.

“Radio Status”

The “Radio Status” field displays the current status of your radio connection.

“Key Status”

The “Key status” field displays the current status of your RTK encryption key. Reference the table below for the possible status messages.

“Encryption Key”

The “Encryption key” field displays the encryption key that you setup in the “GNSS setup” screen.

RTK encryption key statuses

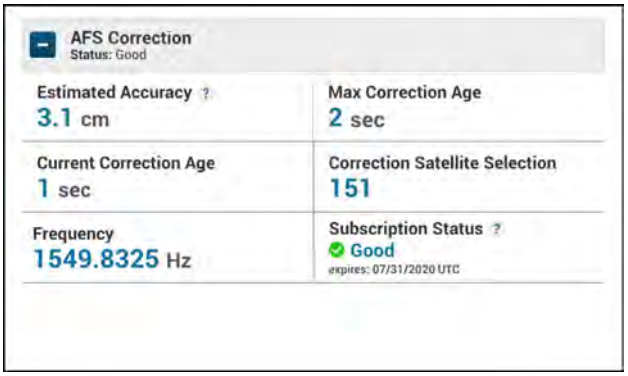
Icon	Text Color	Status – Description
	Green	“Good” – The RTK encryption key is in good standing.
NONE	Blue	“No Key Selected” or “No Key Needed”
	Yellow	“Expiring Soon” – The RTK encryption key is expiring soon.

Icon	Text Color	Status – Description
	Red	“Invalid Key,” “Expired,” or “Wrong Key” – As indicated by status, the RTK encryption key is invalid, expired, or incorrect.

“Radio Software Version”

The “Radio Status” field displays the current software version of your radio module.

”AFS Correction” menu



NHIL20PLM0775FA 4

AFS Correction statuses

Status – Description
“Good” – The AFS Correction is working properly.
“No Position” – The AFS Correction is not providing position.
“Converging” – AFS Correction system is converging.
“Initializing” – The AFS Correction is initializing.

“Estimated Accuracy”

Estimated accuracy refers to the same signal as used in the Availability vs. Accuracy slider in setup. The standard deviations for the particular correction type are used.

“Max Correction Age”

The maximum correction age value recorded over the last **300 s**.

“Current Correction Age”

The “Current Correction Age” field displays the time that has passed since the last message was communicated from the receiver. For AFS corrections, the correction age should be less than 30 seconds.

“Correction Satellite Selection”

The “Correction Satellite Selection” field displays the Pseudo Random Noise (PRN) number of the active correction satellite.

“Frequency”

The “Frequency” field displays the frequency on which the receiver is communicating with the correction satellite.

“Subscription Status”

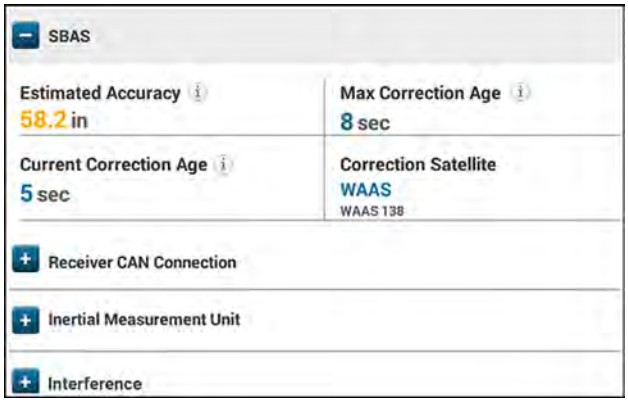
The “Subscription Status” field displays the current status of your AFS correction.

AFS Correction subscription statuses

Indicator	Text Color	Status – Description
	Green	“Good” – The AFS Correction subscription is in good standing.
	Yellow	“Expiring Soon” – The AFS Correction subscription is expiring soon.
	Red	“Expired” – AFS Correction subscription is expired or invalid.

“SBAS” menu

The Satellite-Based Augmentation System (SBAS) increases the accuracy, reliability, availability of the navigation system by utilizing ground station correction messages sent to Global Navigation Satellite System (GNSS) satellites.



RAPH22PLM1724AA 5

“Estimated Accuracy”

Estimated accuracy refers to the same signal as used in the “Accuracy Setup” screen when setting up your GNSS system. The standard deviations for the particular correction type are used.

“Max Correction Age”

The maximum correction age value recorded over the last **300 s**.

“Current Correction Age”

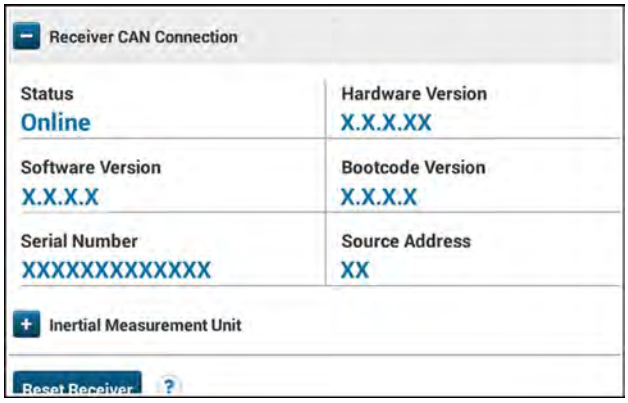
The “Current Correction Age” field displays the time that has passed since the last message was communicated from the receiver.

“Correction Satellite”

The “Correction Satellite Selection” field displays the Pseudo Random Noise (PRN) number of the active correction satellite.

“Receiver CAN connection” menu

The receiver connection to the vehicle Controller Area Network (CAN) displays the information given below.



RAPH22PLM1725AA 6

“Status”

The “Status” field displays the CAN status of the receiver. The available status options are as follows:

"Not Detected” – The default status at the beginning of power up

“Detected” – There has been a CAN address claim, but the system has yet to initialize.

“Initializing” – The receiver CAN information has not yet been detected.

“Online” – The receiver CAN information has been detected and the receiver is functioning on the CAN bus.

“Offline” – Receiver CAN information has not been detected for **3 s**.

“Hardware Version”

The “Hardware Version” field shows the hardware version that is printed on the bottom of the receiver.

“Software Version”

The “Software Version” field shows the software version of the receiver in the “NNN.NNN.NNN.NNN" format. It can also be found in the “Systems” page in the display.

“Bootcode Version”

The “Bootcode Version” field shows the bootcode version of the receiver in the “NNN.NNN.NNN.NNN" format. It can also be found in the “Systems” page in the display.

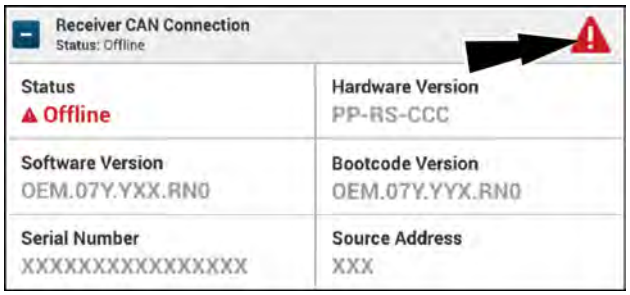
“Serial Number”

The “Serial Number” field shows the receiver serial number that is printed on the bottom of the receiver. This serial number is required to order receiver unlocks.

“Source Address”

The “Source Address” field shows the Controller Area Network (CAN) address of the receiver.

The overall CAN connection status is displayed on the “Receiver CAN Connection” menu bar.



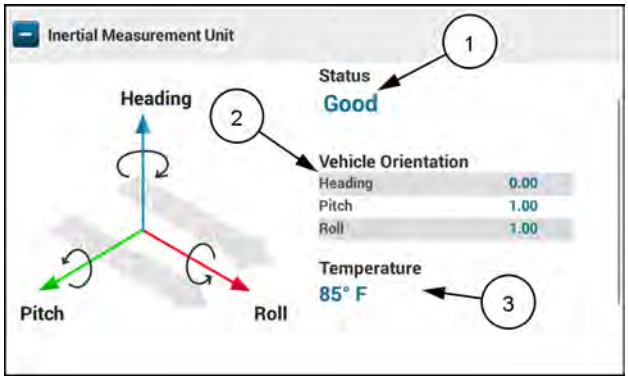
RAIL19PLM1091AA 7

Receiver CAN connection status icons

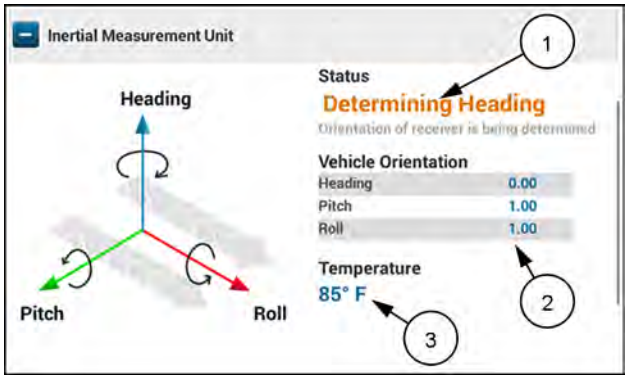
Icon	Text Color	Status – Description
NONE	Black	“Online” – The receiver CAN connection is online.
	Red	“Offline” – The receiver CAN connection is offline.
	Blue	“Initializing” – The receiver CAN connection is initializing.

“Inertial Measurement Units” menu

The Inertial Measurement Unit (IMU) is an integral component of the GNSS receiver that provides rotation and acceleration information for the Inertial Navigation System (INS). The IMU uses a series of sensors, accelerometers, and gyroscopes that provide feedback for roll, pitch, and heading and allow the receiver to compute relative position over time. With this data, the IMU can provide for improved position accuracy and terrain compensation, and can also use the altitude information to provide relative heading and velocity information for use with accessory vehicles. The IMU diagnostic screen provides data for:



RAPH22PLM1726AA 8



RAPH22PLM1727AA 9

– IMU status **(1)**. See figures **8** and **9**.

The following IMU status messages may display:

“Good” – The IMU is initialized and ready for operation.

“Initializing” – IMU has not received position from GNSS.

“Determining Heading” – The system has completed trying to recalled previous orientation, and need the vehicle to move in order to complete the process of initializing and determining heading. The operator may need to speed up or slow down.

“Drive for Heading” – The system has completed trying to recall previous orientation, and needs the vehicle to move in order to complete the process of initializing and determining heading.

“IMU Bridging” – The system is "bridging" a loss in GNSS reception of satellites using the IMU, until the reception improves. If the reception does not improve, the estimated accuracy will increase and eventually the system will not remain engaged in auto guidance, if engaged.

“Position Expired” – The time limit on the GNSS update has expired, and position has been zeroed until GNSS position is regained.

“Receiver Orientation Incorrect” – The INS filter is not yet aligned, and a highly inclined orientation has been detected. Alignment will not proceed until the enclosure is returned to the normal operating orientation.

– Current vehicle orientation **(2)**. See figures **8** and **9**.

The “Vehicle Orientation” fields display the current orientation of the vehicle.

The vehicle orientation is determined by three axes.

“Heading” – directional angle of the vehicle

“Roll” – horizontal angle of the vehicle

“Pitch” – vertical angle of the vehicle

– Temperature **(3)**. See figures **8** and **9**.

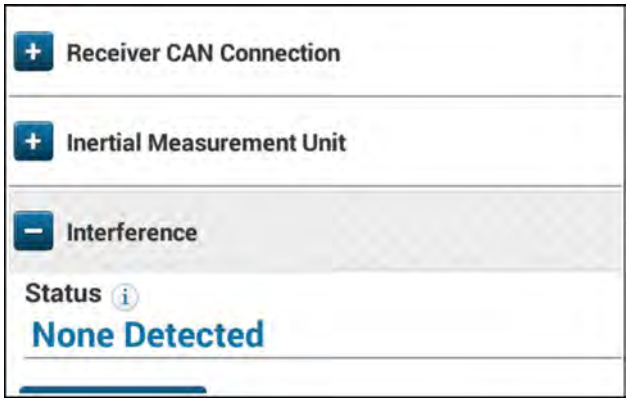
The “Temperature” field displays the current temperature of the IMU as measured by the receiver. Temperature is a factor in sensor accuracy.

“Interference” menu

The receiver provides a feature that detects potential GNSS interference. Interference detected means that the receiver had detected an abnormal source of radio interference that may degrade the GNSS performance.

The interference status can be “Detected” or “None Detected.”

Action may be necessary if the performance of the receiver is noticeably degraded, or the receiver does not report a “Good” GNSS status. Move the vehicle away from any external radio sources, or relocate any mounted third-party systems to a position that is further away from the GNSS receiver.



NHIL20PLM0798AA 10

Resetting the receiver

Reset Receiver

The “Reset Receiver” button will force a reset of the receiver convergence and heading. The reset does not affect any settings in the receiver, and does not affect reception or satellite tracking

A forced reset will:

1. Reset the Precise Point Positioning (PPP) correction signal, requiring you to wait for the signal to converge again.
2. Reset the Heading value and force re-initialization of the heading through driving.
3. Lose your pass-to-pass continuity.
4. Discard any saved location for the position recall feature.

A forced reset should be used if you move the vehicle before the recall process is complete, it is slow to converge, or map position is inaccurate. You may also need to reset the receiver if:

- The heading is not corrected through driving.

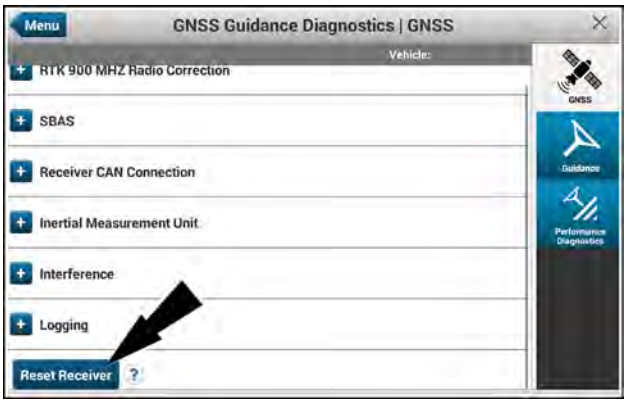
  NOTE: *An error in the heading may be visible on the map, or the implement may not appear in the correct position.*
- The convergence is not acquiring the signal as expected.

  NOTE: *You may also experience abnormal position shifts, which can be caused by poor convergence of the correction signal.*
- The Inertial Measurement Unit (IMU) generates an error.
- The receiver is moved from another vehicle.

NOTE: *If the signal is slow to converge, the receiver may be using the wrong saved position caused by the vehicle moving slightly after being powered down.*

To force a reset of the GNSS receiver, navigate to the "GNSS Guidance Diagnostics" screen on the display, and press the “Reset Receiver” button.

Remain stationary during the receiver reset, until the “Drive to Determine Heading” message appears in the GNSS status area.



RAPH23PLM0528AA 1

The pop-up message appears.

- Resetting the receiver will force the receiver to restart heading estimation and position convergence.
- A minimum **100 ft** by **100 ft** (**30 m** by **30 m**) space is needed for driving and making turns to complete the process.
- The procedure takes about **5 min**.

Remain stationary in Park to continue.

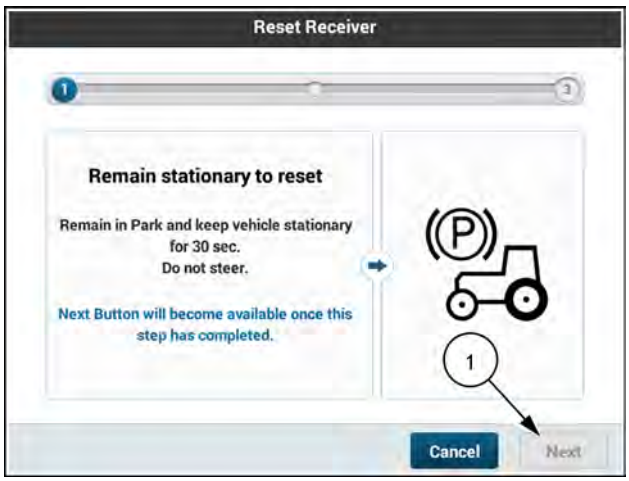
Press the “OK” button **(1)** to continue.

RAPH23PLM1269BA 2

Keep the vehicle stationary for **30 s** (seconds). Do not steer.

When the step is complete, the “Next” button **(1)** will become available.

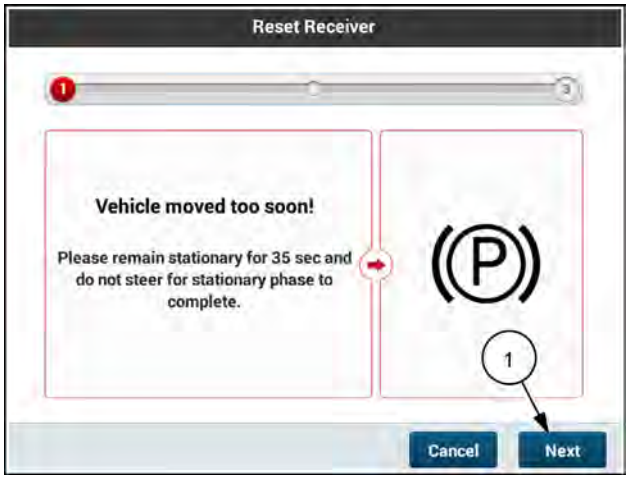
Press the “Next” button to continue.



RAPH23PLM1270BA 3

The warning appears if you move the vehicle too soon. Remain stationary for **35 s** and do not steer.

Press the “Next” button **(1)** once you have remained stationary for at least **35 s**.



RAPH23PLM1271BA 4

Drive the vehicle, alternating straight sections with turns. Driving in a circle is not sufficient.

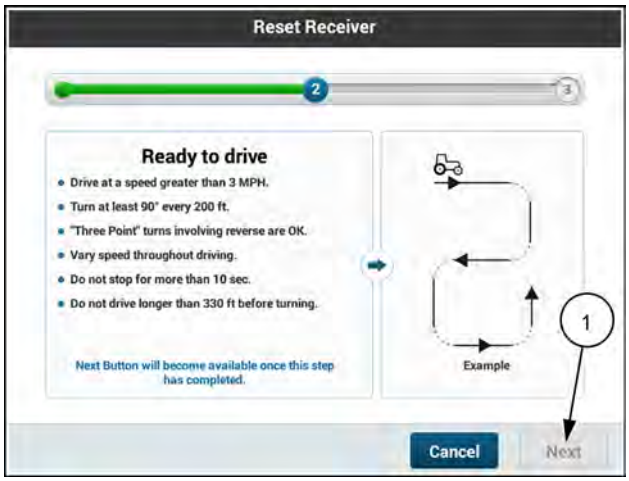
Follow the recommendations on the screen:

- Vary the vehicle speed, maintaining a minimum speed greater than **5 km/h** (**3 mph**).
- Turn at least **90°** every **60 m** (**200 ft**).

  NOTE: *Turns can be performed in any direction.*
- “Three point” turns, involving reverse, are OK.
- Do not stop for more than **10 s**.
- Do not drive longer than **100 m** (**330 ft**)

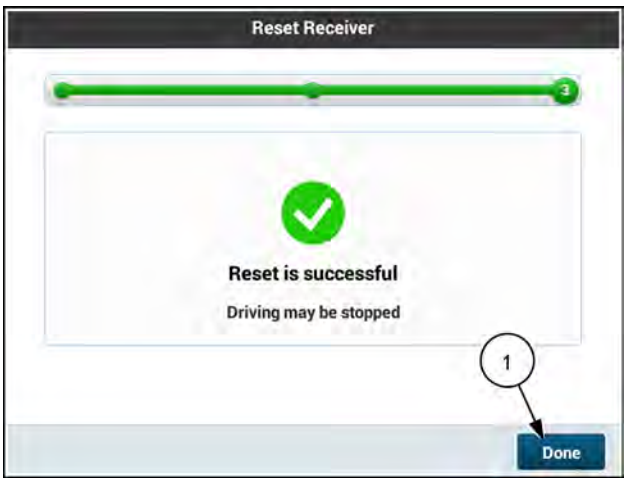
When the step is complete, the “Next” button **(1)** will become available.

Press the “Next” button to complete the receiver reset.



RAPH23PLM1272BA 5

Press the “Done” button **(1)** to exit the procedure.



RAPH23PLM1273BA 6

If an error occurs at any point in the procedure, the warning appears. Press the “OK” button **(1)** and perform another receiver reset.

RAPH23PLM1274BA 7

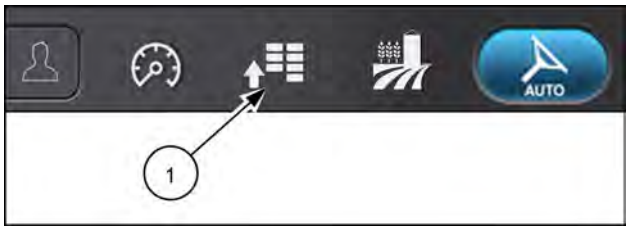
"Guidance" screen

Open “Guidance” screen – Method 1

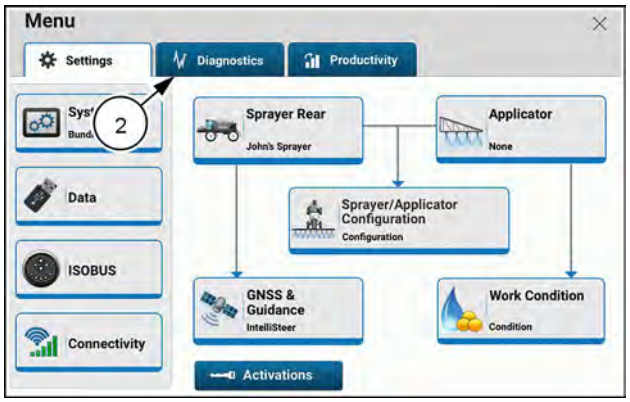
Press the button **(1)** on the top bar to navigate to the “Menu” screen.

From the “Menu” screen, press the “Diagnostics” tab **(2)**.

NOTE: *If a card is grayed out, its described feature is not supported in the vehicle.*



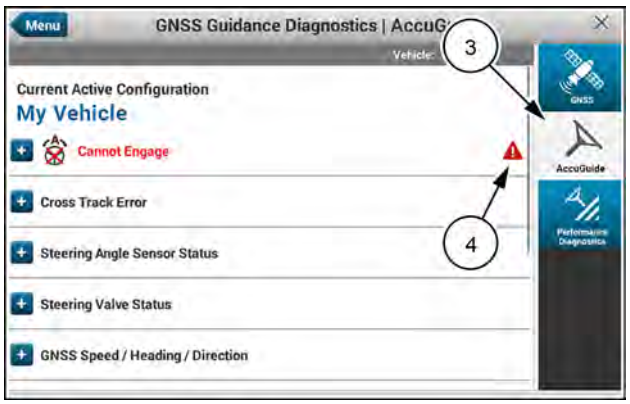
RAIL19PLM0121AA 1



RAPH21PLM1122AA 2

Press the “Guidance” tab **(3)**. The “Guidance” screen opens.

If there is a condition that requires attention, it appears flagged **(4)**.



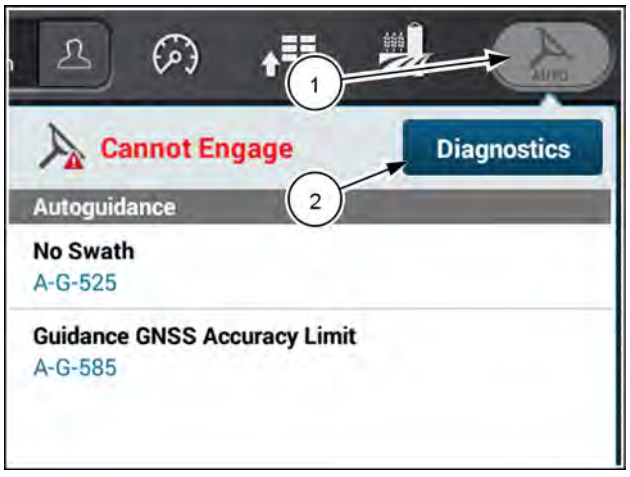
RAPH22PLM1733AA 3

Open “Guidance” screen – Method 2

When the guidance is unable to engage, the engagement status icon **(1)** shows that guidance is disabled. Press a guidance engage button on the multi-function handle or elsewhere on your vehicle if present to see a list of the current faults.

NOTE: *The engagement status icon is not a control that you can press. See the operators manual for your vehicle for the location of the guidance engage controls.*

If needed, press the “Diagnostics” button **(2)** to open the “Guidance” tab in the “Diagnostics” tab of the “Menu” screen.



RAIL19PLM0622BA 4

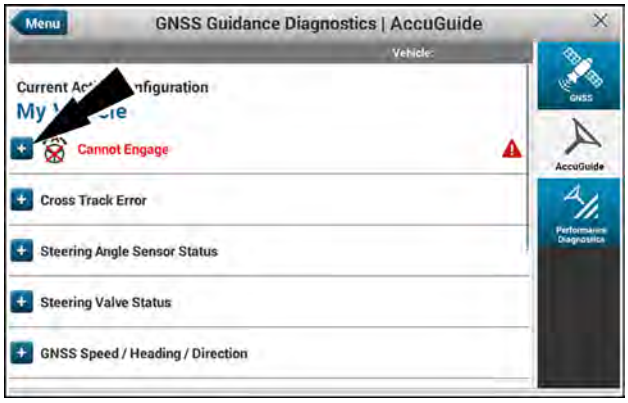
“Guidance” screen components

Press the “Expand’ button to view information about active conditions.

NOTE: *This button is only present when its GNSS diagnostic component menu is collapsed.*

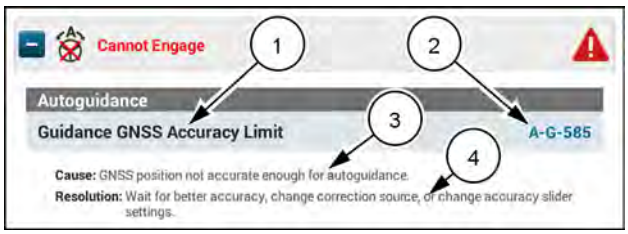
Press the “Collapse” button to collapse a section.

NOTE: *This button is only present when its GNSS diagnostic component menu is expanded.*



RAPH22PLM1733AA 5

The alarm or fault information appears with additional information when you expand a section. The information reflects the information given in the popup message that appeared when the error condition began.



RAIL19PLM0158AA 6

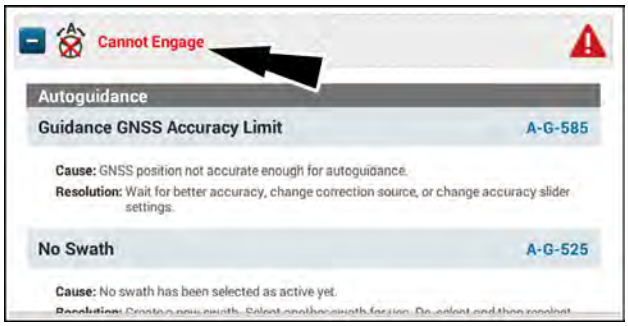
The following information appears as applicable:

1. Title
2. Alarm or fault code
3. Cause
4. Resolution

“Cannot Engage” alarm

“Cannot Engage” alarms appear only if the condition affecting engagement is active.

If you correct a condition that causes a “Cannot Engage” alarm, the alarm appears gray for **3 s** and is then removed.



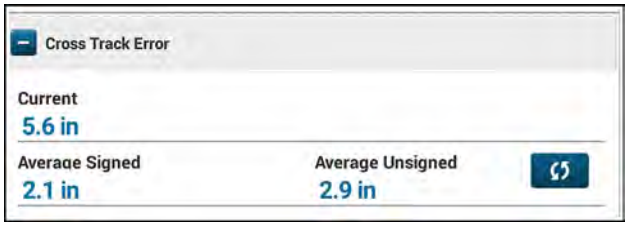
RAPH22PLM1734AA 7

Cross track error

A cross track error occurs when the position of the vehicle relative to the desired swath is greater than the accepted range. To correct the error, the vehicle must move toward the swath.

The following characteristics of cross track error appear in the diagnostics:

- Current – Current cross track error
- Average Signed – The average cross track error in the direction of the current cross track error
- Average Unsigned – The average cross track error regardless of direction



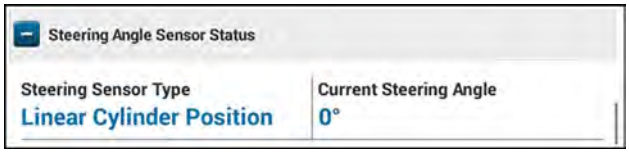
RAPH21PLM1234AA 8

Press the restart button if you wish to start a new sample time for cross track error.

Steering angle sensor status

When expanded, the “Steering Angle Sensor Status” section displays the following statuses:

- Type of steering sensor
- Current steering angle



RAPH22PLM1735AA 9

Steering valve status

When expanded, the “Steering Valve Status” section displays the following statuses:

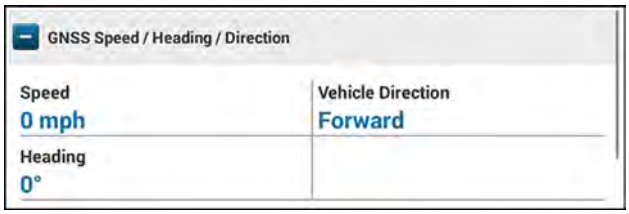
- Type of steering valve
- Steering valve status
- Commanded curvature
- Estimated curvature

RAPH22PLM1736AA 10

GNSS speed / heading / direction

When expanded, the “GNSS Speed / Heading / Direction” section displays the following statuses:

- Speed
- Vehicle direction
- Heading

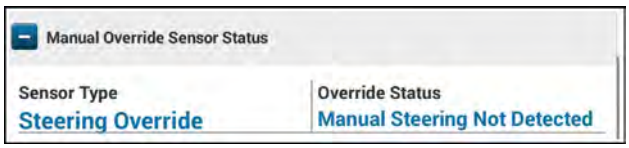


RAPH22PLM1737AA 11

Manual override sensor status

When expanded, the “Manual Override Sensor Status” section displays the following statuses:

- Type of manual override sensor
- Manual override status

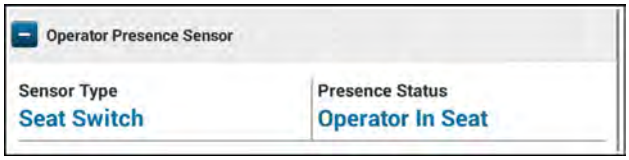


RAPH22PLM1738AA 12

Operator presence

When expanded, the “Operator Presence” section displays the following statuses:

- Type of operator sensor
- Operator sensor status

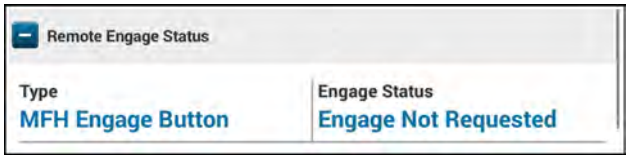


RAPH22PLM1739AA 13

Remote engage status

When expanded, the “Remote Engage Status” section displays the following statuses:

- Remote engage type
- Remote engage device status



RAPH22PLM1740AA 14

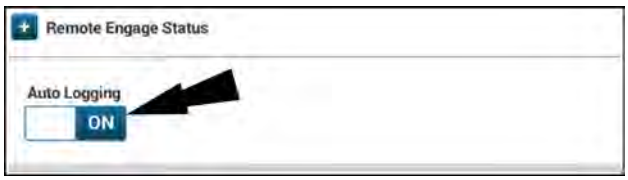
Auto Logging

NOTE: *It is recommended to leave the "Auto Logging" switch OFF unless your CASE IH dealer instructs you to turn it ON.*

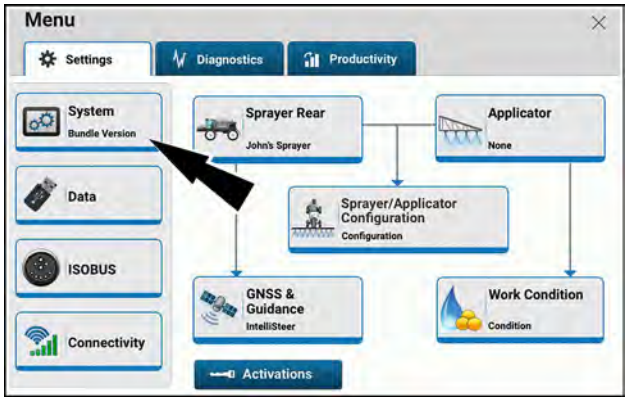
The "Auto Logging" switch enables the system to automatically log guidance data for diagnostic purposes.

When instructed by your CASE IH dealer, press the "Auto Logging" switch to turn automatic logging ON.

After you have logged the data requested by your CASE IH dealer, open the "Logs Files" card in the "Settings" tab of the "Menu" screen. Export the logs. See "Check Controller Area Network (CAN) status and export display logs" (**6-2**) for instructions on exporting the logs.



RAPH21PLM3064AA 15



RAPH21PLM1122AA 16

"Performance Diagnostics" screen

To access swath and acquisition diagnostics, select the "Performance Diagnostics" tab from the “GNSS Guidance Diagnostics” screen.

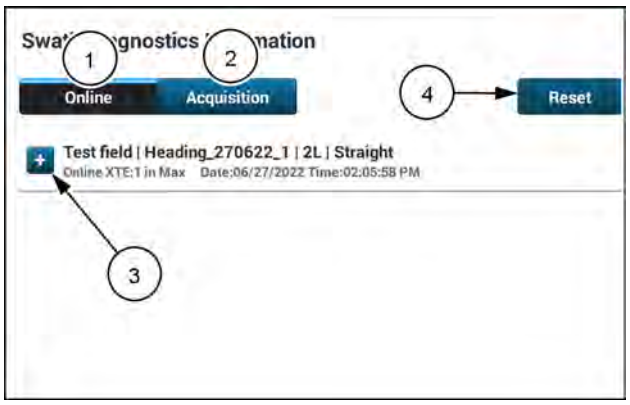
The "Performance Diagnostics" screen provides important information for diagnosing guidance issues within two categories:

- “Online” **(1)** – Swath cross-track error (XTE) and on-line performance
- “Acquisition” **(2)** – Line acquisition performance

The "Performance Diagnostics" screen provides performance data for ten driven swaths, based on the highest maximum cross-track error that was observed. The performance data is grouped based on swath number (visible from the swath number user-defined window).

Press the plus button **(3)** next to the specific driven swath to view the performance data.

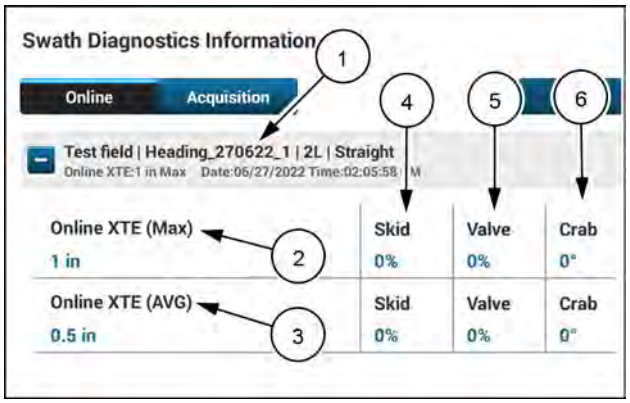
Press the “Reset” button **(4)** to erase the data.



NHIL22PLM0362AA 1

The diagnostic information for on-line guidance performance includes:

- Field name, swath name, swath number, type, date, time, and maximum cross-track error **(1)**
- Maximum cross-track error (“Online XTE”) **(2)** – The maximum cross-track error observed from the time the vehicle acquires the swath until the vehicle disengages from the swath.
- Average cross-track error **(3)** – The average cross-track error from the time the vehicle acquires the swath until the vehicle disengages from the swath.
- Wheel skid (“Skid”) **(4)** – The amount of cross-track error that is caused by the front wheels skidding or bulldozing the soil. A high percentage may indicate improper ballasting and the need for better front end traction.
- Valve error (“Valve”) **(5)** – The amount of cross-track error that is caused by steering valve response performance. A high percentage indicates a lack of steering valve response that can be caused by hydraulic issues on the vehicle.
- Heading (“Crab”) **(6)** – The amount of cross-track error that is caused when the vehicle heading does not match the intended heading (course over ground). A high value (in degrees) may indicate improper ballasting and the need for better front end traction.



NHIL22PLM0360AA 2

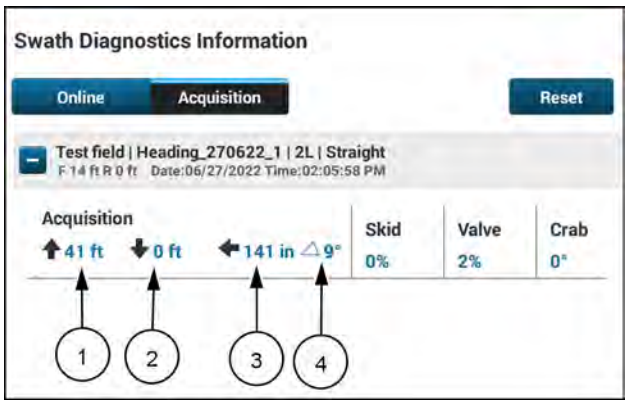
Press the “Acquisition” button to view line acquisition performance.

In addition to the cross-track error data shown on the “Online” data, the following line acquisition performance data is shown:

- Forward acquisition distance **(1)** – The forward distance required for the vehicle to settle on the guidance line with low cross-track error .
- Reverse acquisition distance **(2)** – The reverse distance required for the vehicle to settle on the guidance line with low cross-track error .
- Engage distance **(3)** – The lateral distance to the swath from the vehicle reference point at the time of guidance engagement.
- Engage angle **(4)** – The relative angle to the swath from the vehicle reference point and the swath at the time of guidance engagement.

The forward acquisition distance and the reverse acquisition distance is also shown summarized in the title of the section.

NOTE: *The acquisition distance is only measured once per swath number, in the case that the vehicle engaged on the same swath number multiple times.*



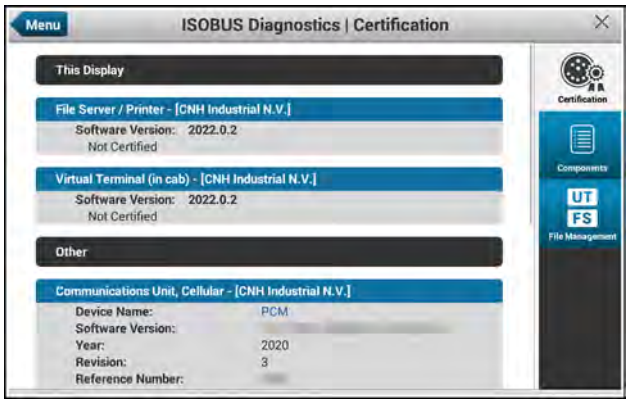
NHIL22PLM0363AA 3

ISOBUS Diagnostics card

"Certification" screen

The “Certification” screen provides the certification status of all **ISO 11783**-detected components.

There is no user interaction in this screen.

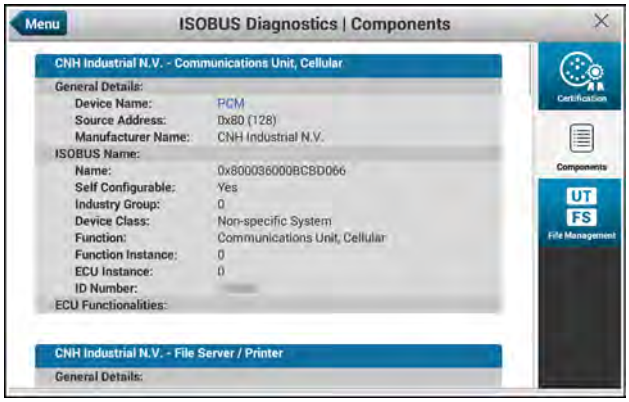


RAPH22PLM0088AA 1

"Components" screen

The “Components” screen gives specific information about all **ISO 11783**-detected components and services.

There is no user interaction with this screen.



RAPH22PLM0089AA 1

"File Management" screen

NOTE: *CASE IH does not recommend performing operations in the "File Management" screen without direction from your CASE IH dealer.*

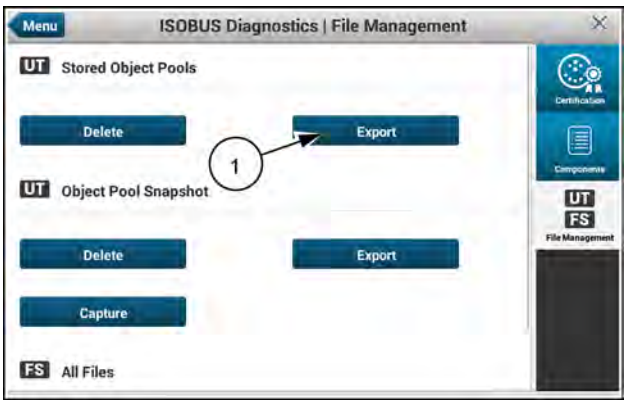
NOTE: *Export, Delete, and Capture functions in the "File Management" screen require an administrative user.*

Export stored object pools

An object pool is a set of data in the universal terminal that makes up the user interface for an implement. The system stores object pools in its memory for later retrieval. This includes the auxiliary control settings.

When you insert the USB memory device into the **Pro 1200** display, the "Export" buttons in the "File Management" tab become active. Without an inserted USB memory device, the "Export" buttons are inactive.

Press the "Export" button **(1)** in the "Stored Object Pools" area.



RAPH22PLM0090AA 1

The "Export Object Pools?" window appears.

Press the "Yes" button **(1)** to export the object pools. The "Exporting Object Pools" popup window appears during the export and then clears when the export finishes.

Press the "No" button **(2)** to cancel the export.

RAPH22PLM0097AA 2

The system exports the stored object pools to the USB memory device in folder " ut_object_pools."

NOTE: *The export can take several minutes. Allow the export to finish before removing the USB memory device from the display or powering OFF the vehicle key.*

When the export is complete, an "Export Finished" window appears.

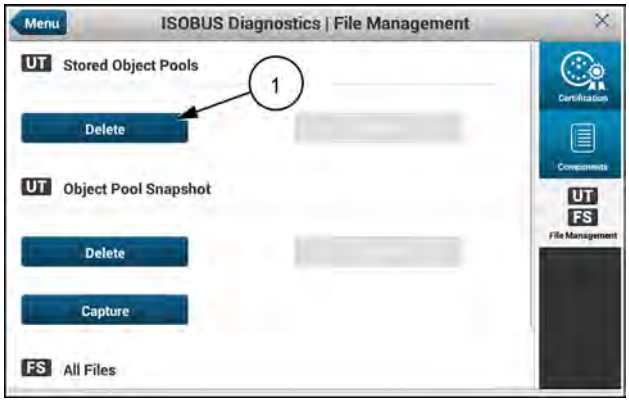
Click the "OK" button to close the window and return to the "File Management" screen.

RAPH22PLM0092AA 3

Delete stored object pools

You can delete stored object pools if they are no longer needed, or if instructed by your CASE IH dealer.

Press the “Delete button **(1)** in the “Stored Object Pools” area. The “Delete Stored Object Pools” window appears.



RAPH22PLM0081AA 4

Press the “Yes” button **(1)** to delete the stored object pools and return to the “ISOBUS Setup” window.

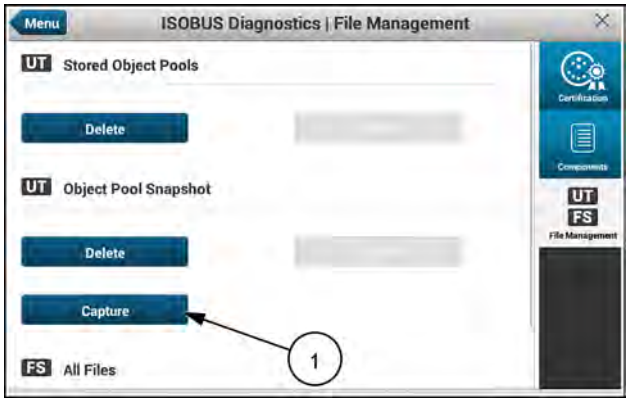
Press the “No” button **(2)** to cancel the deletion and return to the “ISOBUS Setup” window.

RAPH22PLM0080AA 5

Capture stored object pool snapshots

When you press the "Capture" button **(1)** in the “Object Pool Snapshot” area, the display copies a snapshot of the current UT object pool stored within the Random Access Memory (RAM) to the Nonvolatile Memory (NVM).

An onscreen message temporarily appears confirming the capture.

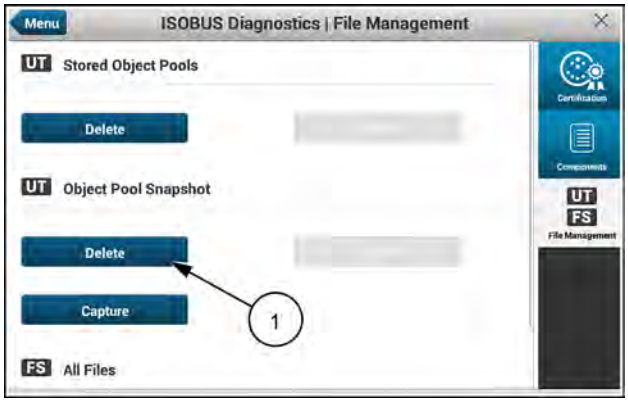


RAPH22PLM0081AA 6

Delete stored object pool snapshots

You can delete object pool snapshots from the RAM if they are no longer needed, or if instructed by your CASE IH dealer.

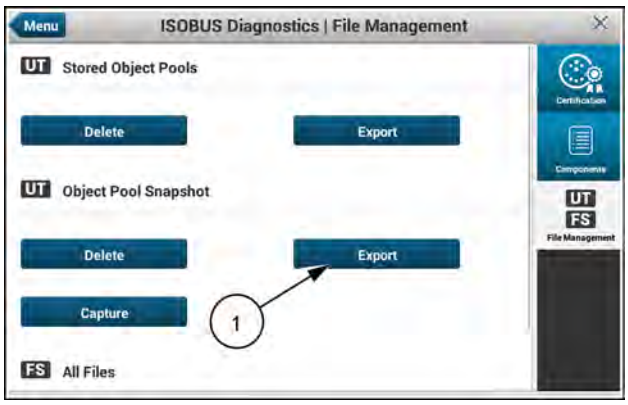
Press the “Delete” button **(1)**. in the “Object Pool Snapshot” area. The “Delete Object Pool Snapshot” window appears.



RAPH22PLM0081AA 7

Export stored object pool snapshots

With a USB memory device inserted into the display, press the “Export” button **(1)** in the “Object Pool Snapshot” area.



RAPH22PLM0090AA 8

The “Export UT Object Pool Snapshots” window appears.

Press the “Yes” button **(1)** to export the object pool snapshots. The system exports the stored object pool snapshots to the USB memory device in folder “ ut_object_pool_snapshots.”

Press the “No” button **(2)** to cancel the export.

RAPH22PLM0094AA 9

When the export is complete, an “Export Finished” window appears.

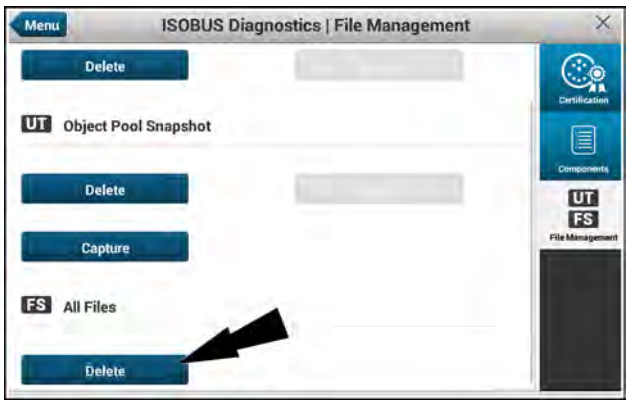
Click the “OK” button to close the window and return to the “File Management” screen.

RAPH22PLM0092AA 10

Delete File Server (FS) files

You can delete file server files from the Non-Volatile Memory (NVM) if they are no longer needed, or if instructed by your CASE IH dealer.

Press the “Delete” button in the “FS All Files” area.



RAPH22PLM0082AA 11

The “Delete All Files” window appears.

The “Delete All Files” window states, “There are (x) files in internal file server storage. All file server files saved to internal storage will be deleted permanently. This operation does not affect any files saved to a USB storage device. Do you want to proceed?”

Press the “Yes” button **(1)** to delete the implement files stored in the display memory.

Click the “No” button **(2)** to cancel the deletion.

RAPH22PLM0095AA 12

The “Delete Stored Object Pools” window appears, stating that all of the FS files were succesfully deleted.

Press the “OK” button to return to the “File Management” screen.

RAPH22PLM0096AA 13

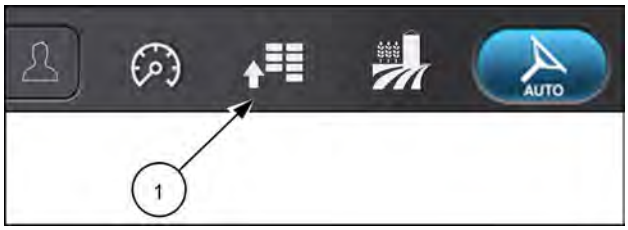
"Connectivity Diagnostics"

"Connectivity Diagnostics" card

NOTE: *Connectivity functions may not be available in all markets.*

Press the “Menu” button **(1)** on the top bar to navigate to the “Menu” screen.

From the “Menu” screen, press the “Diagnostics” tab.



RAIL19PLM0121AA 1

Press the “Connectivity Diagnostics” card to access the “Status” screen.

The “Connectivity Diagnostics” card is used to monitor all of the different aspects of your vehicle’s connectivity.

NOTE: *The “Connectivity Diagnostics” card is only active when the Processing and Connectivity Module (PCM) is powered and operating on the vehicle.*

NHIL19PLM0610AA 2

The “Status” screen contains information related to:

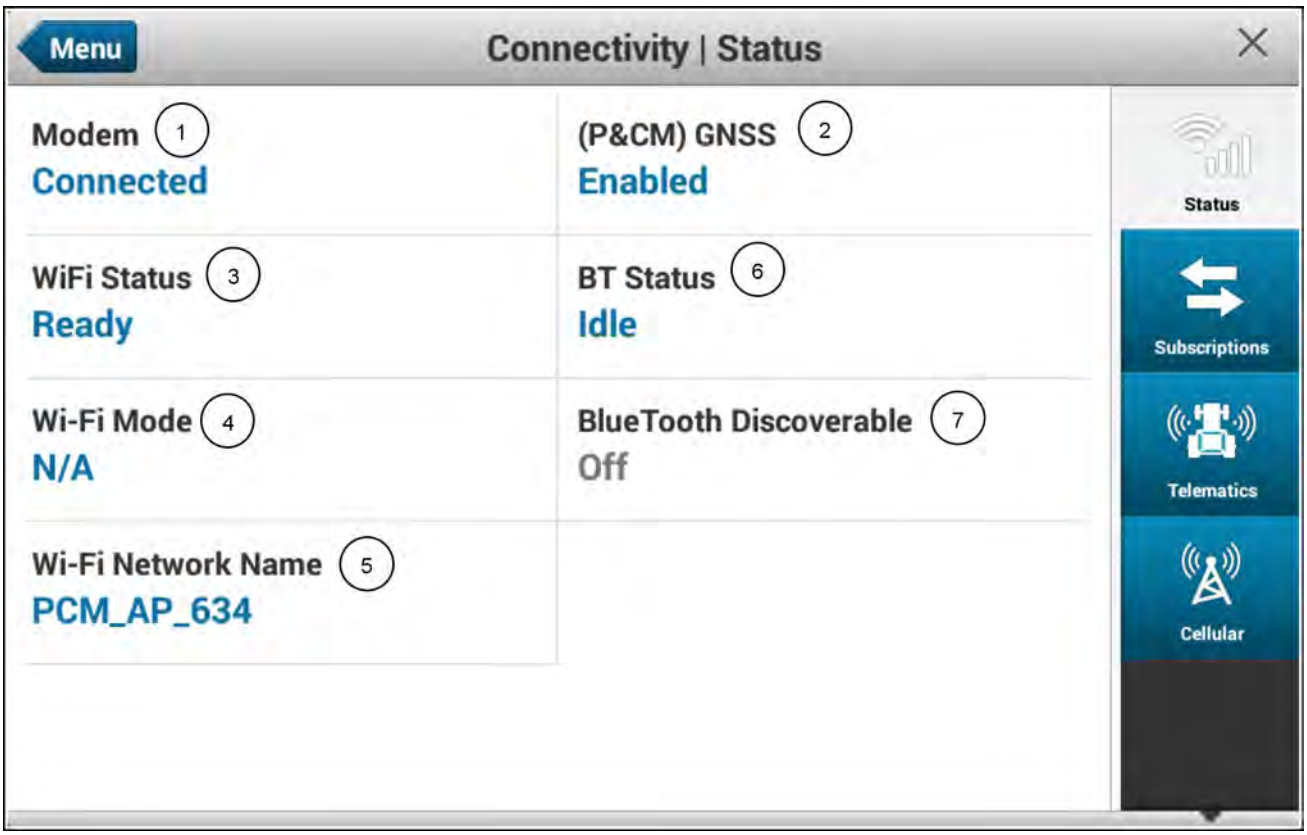
- Modem status
- Wi-Fi status
- **Bluetooth®** status
- Internal receiver status

The “Subscription” screen contains subscription status information for various features in the display.

The “Telematics” screen displays information related to the telematics system.

The “Cellular” screen displays information related to the cellular modem.

"Status" screen



NHIL19PLM0588AA 1

The “Status” screen of the “Connectivity Diagnostics” card displays the following information regarding the Processing and Connectivity Module (PCM):

(1) – “Modem”

The “Modem” field displays the status of the modem in the PCM. The available status options are as follows:

Off – The modem is not powered on.

Not Connected – The modem is powered on, but not attempting to connect to a network.

Connecting – The modem is powered on and attempting to connect to a network.

Connected – The modem is powered on and connected to a network.

Temperature Protection – The modem has shutdown due to extreme temperatures; the internal board temperature is displayed.

Error – The status of the modem is unknown, or there was an error while retrieving the status.

(2) – “(P&CM) GNSS”

The PCM contains an internal Global Navigation Satellite System (GNSS) receiver for the purposes of reporting the vehicle location to the vehicle manager through the AFS Connect portal.

The "(P&CM) GNSS” field displays the status of the internal GNSS receiver in the PCM. The available status options are as follows:

Off – The receiver is disabled.

Enabled – The receiver is enabled, but a position fix has not been achieved.

Fixed – The receiver is enabled, and a 2D or 3D fix has been achieved.

Connected – The modem is powered on and connected to a network.

Temperature Protection – The receiver has shutdown due to extreme temperatures; the internal board temperature is displayed.

Error – The status of the receiver is unknown, or there was an error while retrieving the status.

(3) – “WiFi Status”

The PCM contains an internal Wi-Fi radio to connect to the PCM for diagnostic purposes.

The "WiFi Status” field displays the status of the WiFi radio in the PCM. The available status options are as follows:

Off – The radio is not powered on.

Idle – The radio is powered on, but not attempting to connect to a network or device.

Online – The radio is connected.

Ready – The radio is ready to connect.

Temperature Protection – The radio has shutdown due to extreme temperatures; the internal board temperature is displayed.

Error – The status of the radio is unknown, or there was an error while retrieving the status.

(4) – “WiFi Mode”

The “WiFi Mode” field displays the mode that the WiFi radio is currently set to. This field is only valid when the modem is powered on and not in the “Error” or “Temperature Protection” state.

Infrastructure (AP/STA) – The radio is configured in “Infrastructure” mode.

Ad-Hoc – The radio is configured in “Ad-Hoc” mode, but a mesh client is not active.

Mesh – The radio is configured in “Ad-Hoc” mode, and a mesh client is active.

N/A – The radio is not on, or the radio has an error.

(5) – “WiFi Network Name”

The “WiFi Network Name” field displays the name of the network that the WiFi radio is broadcasting. This field is only valid when the radio is connecting or has already connected to a network.

(6) – “BT Status”

The PCM contains an internal **Bluetooth®** radio to communicate with external devices.

The "BT Status” field displays the status of the **Bluetooth®** radio in the PCM. The available status options are as follows:

Off – The radio is not powered on.

Idle – The radio is powered on, but not attempting to connect to a network or device.

Scan – The radio is powered on and is looking for networks and/or devices.

Connected – The radio is connected to a network or device.

Temperature Protection – The radio has shutdown due to extreme temperatures; the internal board temperature is displayed.

Error – The status of the radio is unknown, or there was an error while retrieving the status.

(7) – “BlueTooth Discoverable”

The “BlueTooth Discoverable” field indicates if the **Bluetooth®** radio is in “Discoverable” mode or not.

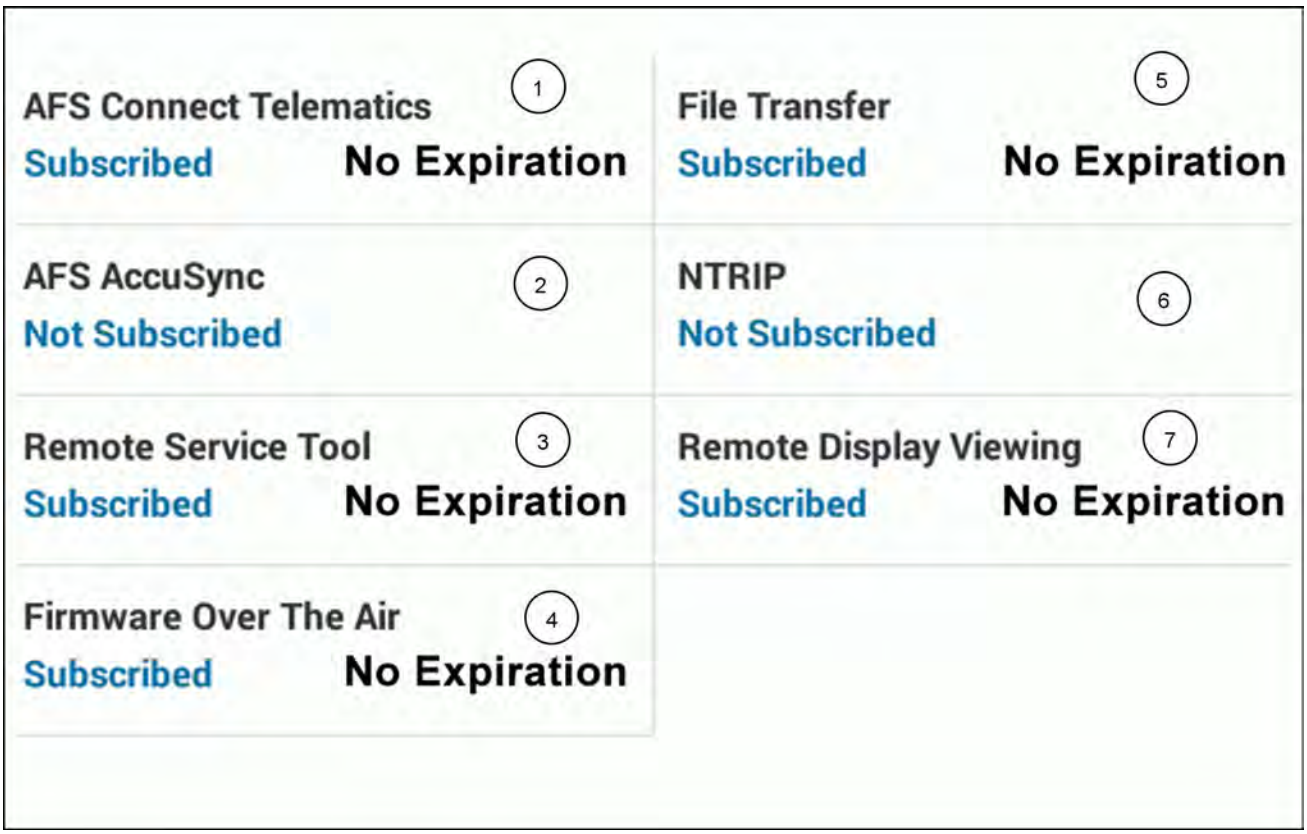
The possible values are as follows:

Off – The radio is not discoverable.

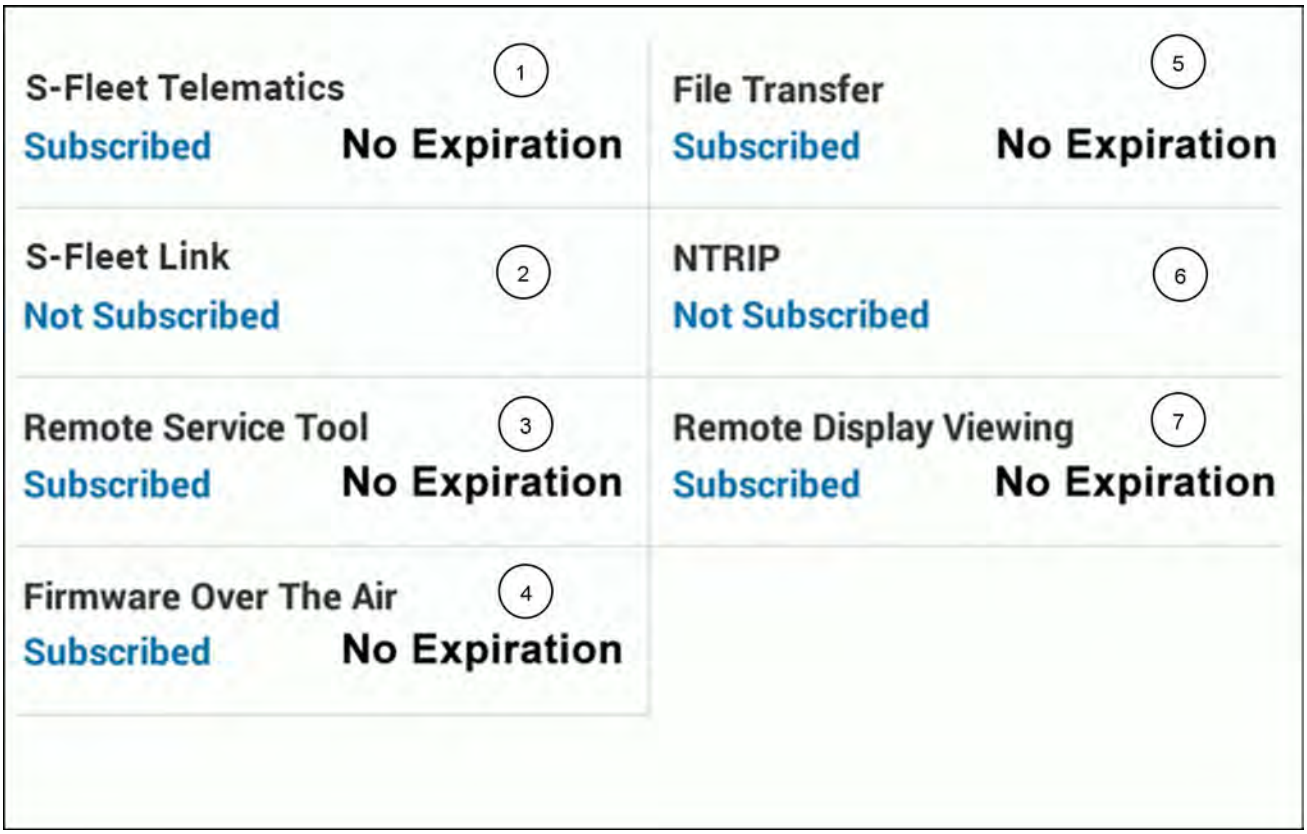
On – The radio is discoverable.

Error – Status unknown.

"Subscriptions" screen



NHPH24PLM0485AA 1



NHPH24PLM0484AA 2

The “Subscriptions” screen of the “Connectivity Diagnostics” card displays the following information regarding the subscriptions in your display:

(1) – “Telematics”

The “Telematics” field displays the telematics subscription status. The available status options are as follows:

Not Subscribed – The subscription is inactive.

Subscribed – The subscription is active.

(2) – **AFS AccuSync™**

Not Subscribed – The subscription is inactive.

Subscribed – The subscription is active.

(3) – “Remote Service Tool”

The “Remote Service Tool” field displays the subscription status for the **AFS Connect™** Support Pro function. The available status options are as follows:

Not Subscribed – The subscription is inactive.

Subscribed – The subscription is active.

(4) – “Firmware Over-The-Air”

The “Firmware Over-The-Air” field displays the subscription status for the remote software update function. The available status options are as follows:

Not Subscribed – The subscription is inactive.

Subscribed – The subscription is active.

(5) – “File transfer”

The “File transfer” field displays the subscription status for the **AFS Connect™** File Transfer function. The available status options are as follows:

Not Subscribed – The subscription is inactive.

Subscribed – The subscription is active.

(6) – “NTRIP”

The “NTRIP” field displays the subscription status for cellular-delivered differential corrections, or Network Transport of RTCM via Internet Protocol (NTRIP). The available status options are as follows:

Not Subscribed – The subscription is inactive.

Subscribed – The subscription is active.

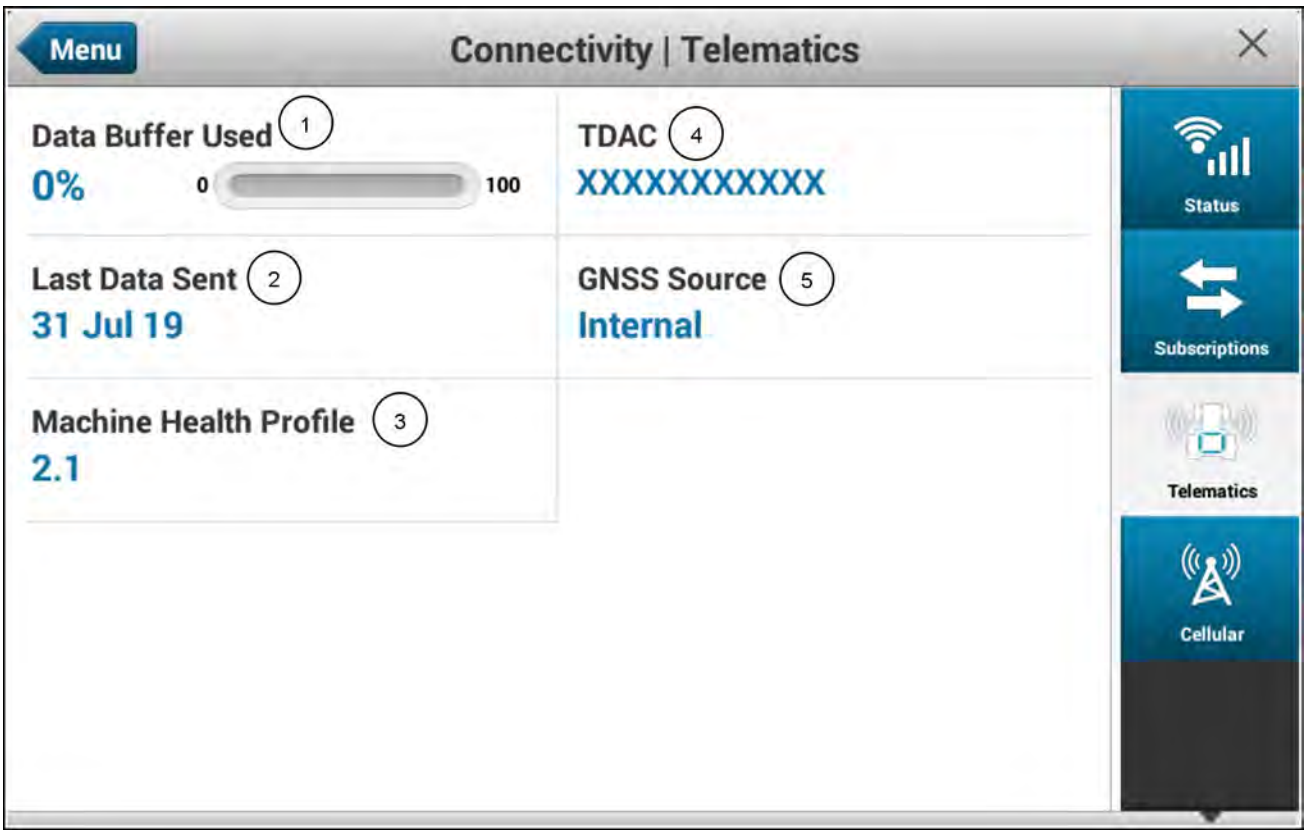
(7) – “Remote Display View”

The "Remote Display View” field displays the subscription status for the **AFS Connect™** Display Viewing function. The available status options are as follows:

Not Subscribed – The subscription is inactive.

Subscribed – The subscription is active.

"Telematics" screen



NHIL19PLM0590AA 1

NOTE: *The basic "Telematics" screen is shown. Depending on your telematics and file transfer subscription level, additional fields described below will be displayed.*

The "Telematics" screen displays several fields related to the performance of the telematics system on the vehicle.

(1) – "Data Buffer Available"

The "Data Buffer Available" field indicates the status of the buffer memory that is available for the telematics application to store information during a network outage. The field displays a value between 0% and 100%, where 0% represents an empty buffer and 100% represents a buffer that is full and cannot store any more data.

(2) – "Last Data Sent"

The "Last Data Sent" field displays the time stamp of when the last packet was sent for telematics to the **AFS Connect™** portal.

(3) – "Machine Health Profile"

The "Machine Health Profile" field displays the current machine health profile loaded into the display.

(4) – "TDAC"

The "TDAC" field displays the read-only Telematics Dealer Activation Code (TDAC) number that is required to activate your device on the **AFS Connect™** portal.

(5) – "GNSS Source"

The read-only "GNSS Source" field indicates which source of the GNSS signal will be used for telematics. The available options are as follows:

"Internal" – The internal GNSS receiver of the Processing and Connectivity Module (PCM) is being used.

"Logged" – The logged position provided by the precision farming application on the display is being used.

Additional fields – Telematics and File Transfer

The following additional fields may be visible on your “Telematics” screen:

- “Last File Transfer Upload” – The time stamp of when the last data synchronization package was successfully uploaded to the **AFS Connect™** portal.
- “Last File Transfer Download” – The time stamp of when the last data synchronization package was successfully downloaded from the **AFS Connect™** portal.
- “File Transfer Upload Status” – The status of the current data synchronization package transfer to the portal.

  Idle – No transfer in progress.

  Uploading – The data is being uploaded to the portal.

  Complete – The data has successfully been transferred.

  Suspended – There is no connection available.
- “File Transfer Download Status” – The status of the current data synchronization package transfer from the portal.

  Idle – No transfer in progress.

  Uploading – The data is being downloaded from the portal.

  Complete – The data has successfully been transferred.

  Suspended – There is no connection available.
- Machine profiles – The current profile that is loaded for the indicated system. The following profiles may be displayed:

  “Status Profile”

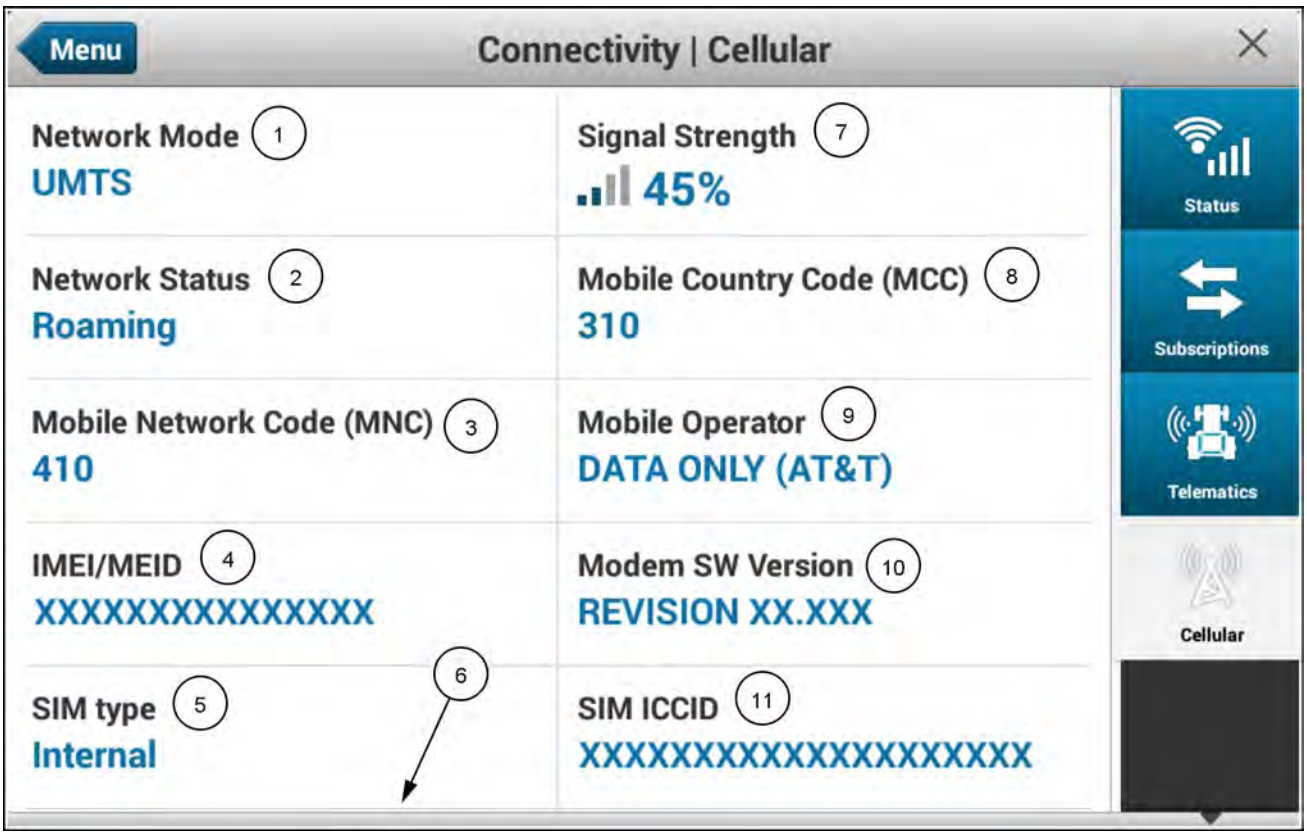
  “Data Profile”

  “Power Management Profile”

  “Geofence profile”

  “Curfew Profile”

"Cellular" screen



NHIL19PLM0591AA 1

The "Cellular" screen of the “Connectivity Diagnostics” card displays the following information regarding the cellular connection of the modem.

(1) – “Network Mode”

The “Network Mode” field displays the current network mode that the modem is in. The possible options are as follows:

GSM/UMTS – The modem is connecting or is connected to a GSM/GPRS/UMTS network.

CDMA/EVDO – The modem is connecting or is connected to a CDMA2000/1xRTT/EVDO network.

(2) – “Network Status”

The “Network Status” field displays the status of the network on the current mode. The possible options are as follows:

Unregistered – The modem has not connected to or registered on the current network.

Registered – The modem is connected and registered on the current home network.

Roaming – The modem is connected to a roaming network.

(3) – “Mobile Network Code (MNC)”

The “Mobile Network Code (MNC)” field displays the network code of the current network.

(4) – “IMEI/MEID”

The “IMEI/MEID” field displays the Mobile Equipment Identifier (MEID) of the modem when in the CDMA/EVDO network mode.

(5) – “SIM type”

The “SIM type” field indicates if the modem is using the internal SIM (integrated) card or an external SIM card.

Internal – The modem is using the internal SIM card.

External – The modem is using an external SIM card.

(6) – “SIM IMSI”

The “SIM IMSI” field displays the International Mobile Subscriber Identity (IMSI) of the current SIM card.

NOTE: *Scroll down on the “Cellular” screen to view the “SIM IMSI” field.*

(7) – “Signal Strength”

The “Signal Strength” field indicates the current signal strength of the connected network, from 0% to 100%; 0% indicates the poorest signal, and 100% represents the strongest signal.

(8) – “Mobile Country Code (MCC)”

The “Mobile Country Code (MCC)” field displays the network code of the current network.

(9) – “Mobile Operator”

The “Mobile Operator” field displays the country identifier of the current network.

(10) – “Modem SW Version”

The “Modem SW field” displays the current software version loaded in the modem.

(11) – “SIM ICCID”

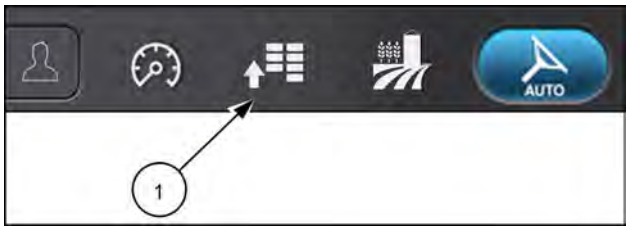
The “SIM ICCID” field displays the Integrated Circuit Card Identifier (ICCID) of the current SIM card.

Application control diagnostics

"Application Control Diagnostics" screen

Press the button **(1)** on the top bar to navigate to the “Menu” screen.

From the “Menu” screen, press the “Diagnostics” tab.



RAIL19PLM0121AA 1

Press the “Application Control Diagnostics” card to access the “Work Control” screen.

RAPH21PLM1019AA 2

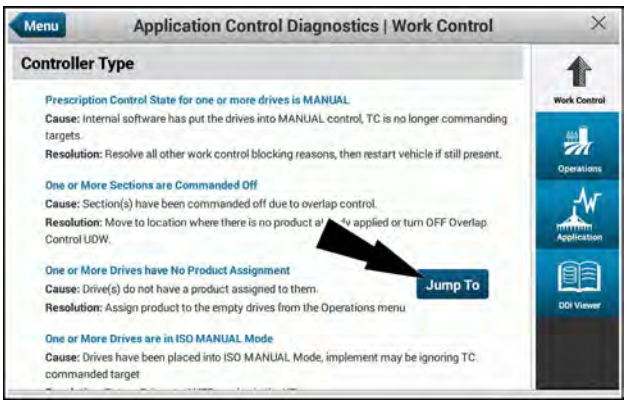
"Work Control" screen

The “Work Control” screen displays work control status. You can view current application status information when executing a setup procedure or troubleshooting a scenario where application requirements are not being met.

Some sections of the “Work Control” screen provide a “Jump To” button. Pressing the “Jump To” button opens the screen applicable to the section where you can determine if there is a setup issue.

For example, pressing the “Jump To” button in the section titled, “Work Switch Source State Is OFF” takes you to the “Vehicle Implement Configuration / Sources” screen where you can examine the work switch configuration.

When there are no work control issues the “Work Control” screen states that there are none.



RAPH23PLM0541AA 1

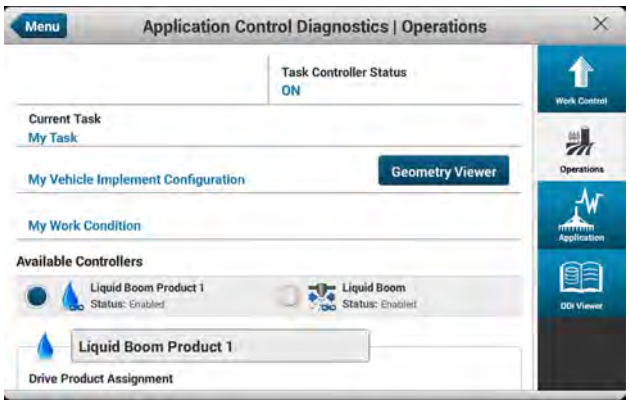
RAPH23PLM0534AA 2

"Operations" screen

The “Operations” screen displays the currently used configurations that are established in the “Operations” screen.

The following items appear:

- Current crop type
- Task controller status
- Current task
- Vehicle implement configuration
- Current work condition
- Available controllers
- Drive assignments

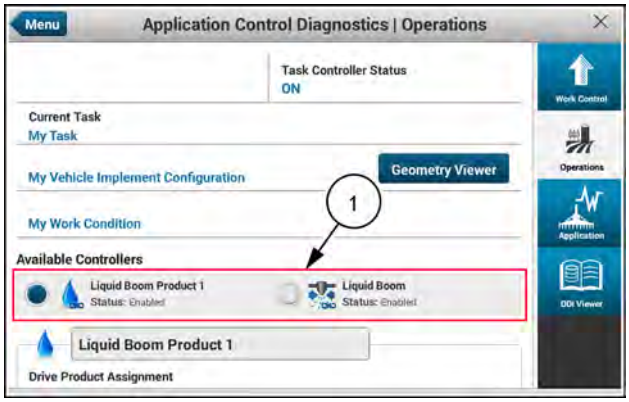


RAPH23PLM0542AA 1

RAPH23PLM0543AA 2

The configured product control parameters appear.

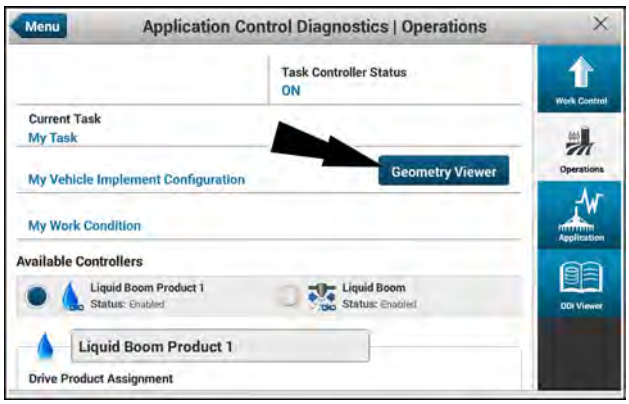
Press a radio button **(1)** to choose the available controller configurations. You cannot change the configurations in the “Diagnostics” tab. The controls in the “Diagnostics” tab are for choosing information that you view.



RAPH23PLM0542AA 3

You can examine the geometry of the detected implement. The “Implement Geometry” screen provides comprehensive measurement and status information regarding the implement.

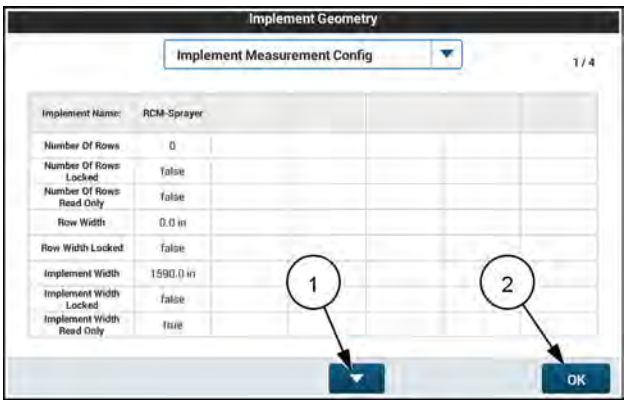
Press the “Geometry Viewer” button to open the “Implement Geometry” screen.



RAPH23PLM0542AA 4

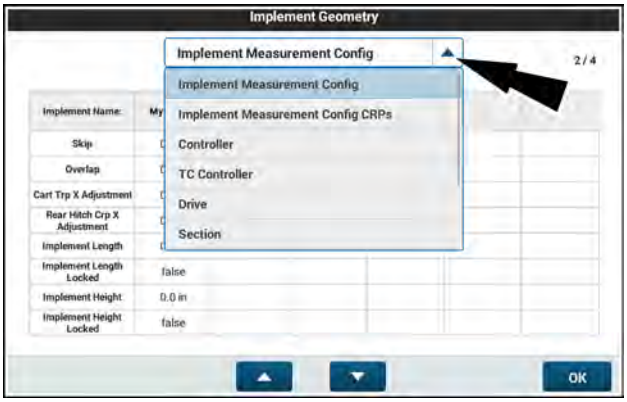
Press the up-arrow and down-arrow buttons **(1)** (up not shown) to navigate between the pages in the “Implement Geometry” screen.

Press the “OK” button **(2)** to close the “Implement Geometry” screen.



RAPH23PLM0548AA 5

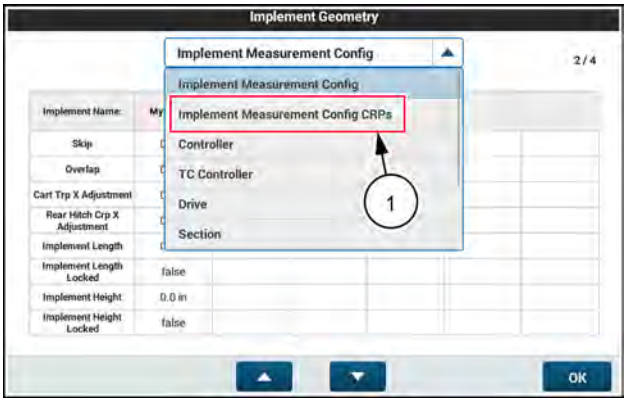
Open the menu and select the desired menu item to see its geometry.



RAPH23PLM0549AA 6

In the “Implement Measurement Config CRPs” menu item, “CRP” is the Connection Reference Point. This defines the point at which the implement is connected to the vehicle.

This is normally zero for this sprayer.



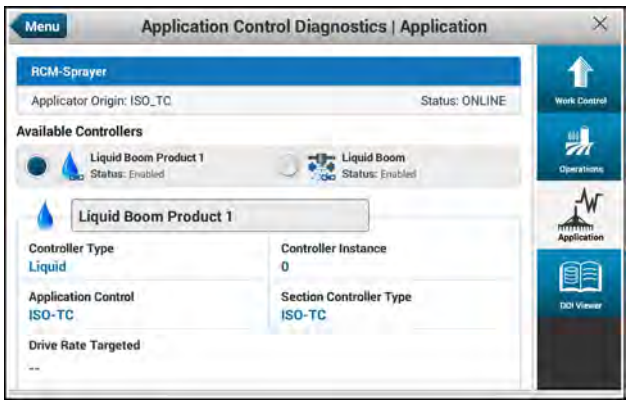
RAPH23PLM0549AA 7

"Application" screen

The “Application” screen displays application status parameters that assist in diagnosing rate or section control problems.

With an applicator configured for product control, the configured product control parameters appear.

Press a radio button to choose the available controller configurations. You cannot change the configurations in the “Diagnostics” tab. The controls in the “Diagnostics” tab are for choosing information that you view.



RAPH23PLM0545AA 1

The “Application” screen reports the currently selected applicator. For applicators that do not communicate the status reads “Offline.”

RAPH23PLM0552AA 2

"DDI Viewer" screen

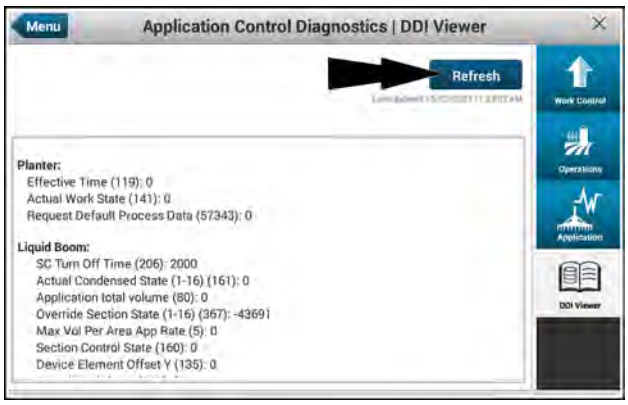
The Data Dictionary Identifier (DDI) “DDI Viewer” screen provides detailed information about attached ISOBUS implements. If there is more than one application controller or more than one attached ISOBUS implement, the screen presents information about each one.

You can use the information in the “DDI Viewer” screen to help diagnose and troubleshoot problems.

Information about the implements varies, depending up the type and model of implement and application controllers.

Scroll down to see all of the information.

If conditions change or you expect changes, press the “Refresh” button to see updated information.



RAPH23PLM0539AA 1

Faults and alarms

Overview

Each fault and alarm, when triggered, displays the same set of information:

(1) – Code identification

(2) – Fault or alarm title

(3) – Severity

(4) – Associated icon for the functional area or subsystem

(5) – Fault or alarm message

(6) – Actions (up to three buttons)

RAIL19PLM0182AA 1

Definition

Error code definition is based on standardized Failure Mode Identifiers (FMI) and Suspect Parameter Numbers (SPN) codes defined in the **SAE J1939** standard. The error code can be a fault (stored) or an alarm (non-stored).

- Generally, a fault represents a condition that considerably affects system functionality, such as a sensor failure or communication failure. These conditions are continuous, and can be in an active or inactive state.
- Alarms (also known as warnings, or alerts) can be informational or require an operator action to fix the temporary condition. Conditions that trigger an alarm can be as simple as an expired subscription for GNSS correction, or an indication that the operator must move to “open sky” to remedy a poor GNSS reception condition. Alarms are not stored, and cannot be represented in an active or inactive state.

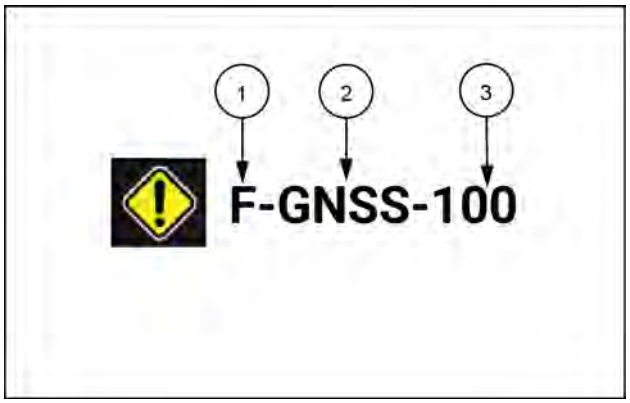
Each error code consists of three sections:

(1) – Type (fault “F” or alarm “A”)

(2) – Subsystem, such as:

- “GNSS”: Guidance system
- “ACT”: Activations

(3) – Message ID



NHIL18PLM1508AA 2

Severity

Every fault and alarm has an associated severity level that is defined in the table below.

Faults and alarms – Severity identification

Icon	Severity	Description
	Low	The condition is present but non-critical to normal operation of the machine. A low severity error condition provides information to the operator on the condition of a subsystem.
	Medium	The condition is present and can affect normal operation of the machine, however the error does not pose significant risk to the operator or damage the machine.
	High	The condition is present and will affect normal operation of the machine, causing significant risk to the operator and/or damage to the machine.

Actions

Up to three buttons will display on the pop-up window for the error code, depending on the condition. For most errors, the available options are “OK” or “SUPPRESS”. However, if operator action is required on a different screen on the display, the error code will provide a link to press and automatically go to that screen. An example may be a circumstance where a calibration is required; therefore, the display will provide a “CALIBRATE” button for the operator to press and access the calibrations page.

Alarm and fault code index

NOTE: *The codes are listed numerically then alphabetically.*

Fault and alarm codes

Code	Title	Severity	Message	Description
A-ACT-001	Conflict, no machine unlock	Low	An after market display is installed without a machine control unlock.	Area of Concern: Activations Contact your CASE IH dealer for an activation code.
A-CORE-001	Display Hi Temp, Backlight Reduction Imminent	Medium	The display internal temperature is higher than normal. The display backlight will dim by 50 percent to reduce power consumption and heat.	Area of Concern: Display core The display internal temperature is higher than normal. The display backlight will dim by 50 percent in an effort to reduce power consumption and heat. Take measures to reduce the ambient temperature within the vehicle interior.
F-PCM-001	PCM Signals Error	Medium	PCM Signals disconnected	Area of Concern: System Display cannot communicate with PCM. Check connections.
A-CORE-002	Display High Temp limit reached, Display will re-start	High	The display internal temperatures is extremely high. The display will proceed to save data and shutdown.	Area of Concern: Display core The display internal temperature is extremely high. The display will attempt to gracefully shutdown and save data if possible. Take measures to reduce the ambient temperature within the vehicle interior.
A-CORE-003	Display Under-Voltage Condition Detected	High	The display supply voltage has fallen to **7 V** DC. The display will attempt to save data and shut-down.	Area of Concern: Display core The display is in a low voltage condition, which will result in the display shutting down. The display will attempt to save data prior to shutdown. Check the vehicle electrical power supply system components and cabling.
A-CORE-004	Require Password Configuration Change by EST	Low	The EST has successfully changed the Require Password parameter within the Display.	Area of Concern: Display core The EST has changed the value of the Require Password parameter at the Display to disable all passwords.
A-CORE-005	Software Incompatibility Detected	High	A software incompatibility has been detected between the PCM controller and the display	Area of Concern: Display core The display has detected an incompatible software version at the PCM controller. Update the software at either the display or the PCM controller.
A-CORE-006	Display time has been synchronized with the P&CM	Low	The P&CM has obtained the current time from the network (GNSS/Cell Network) and differs from the Display's clock resulting in a time correction on the display.	When the PCM obtains the time from the network, and the display time differs by 60 seconds or more, then the display time is changed to that specified by the PCM.
A-CORE-007	Display storage memory 90% full	Low	The Display has reached 90% storage memory capacity.	The display system storage has only 10% of the allotted storage space remaining.
A-CORE-008	Display storage memory is full.	Medium	Display storage memory is full. Archive data and remove unwanted files from the Applications menu.	The display system storage reached the maximum level of allotted storage space.

Code	Title	Severity	Message	Description
A-G-058	Operator Not Seated	Low	The operator must be seated for guidance operation.	Area of Concern: Autoguidance Sit down.
A-G-059	Operator Not Seated	None	The operator must be seated for guidance operation.	Area of Concern: Autoguidance Sit down.
A-G-060	Roading Mode On	Low	A remote roading switch on the vehicle is currently set to road mode, so autoguidance is disabled.	Area of Concern: Autoguidance Change the roading switch on the vehicle from road mode to field mode.
A-G-066	Steering Profile Invalid	Low	The steering valve has reported an unsupported steering axle type.	Area of Concern: Autoguidance Contact your CASE IH dealer to check the valve configuration.
A-G-067	No Vehicle Profile for Model	Low	The vehicle model profile is not found.	Area of Concern: Autoguidance Contact your CASE IH dealer.
A-G-100	No Communication with GNSS Receiver	Low	GNSS receiver messages are not present on the CAN bus.	Area of Concern: Autoguidance Check the receiver connections with the receiver. Cycle power. Check the vehicle fuses and ensure that the receiver is getting power.
F-GNSS-100	No Communication with GNSS Receiver	Medium	GNSS receiver messages are not present on the CAN Bus.	Area of Concern: Guidance and GNSS Check the GNSS receiver connections. Cycle power. Check the vehicle fuses and ensure that the receiver is getting power.
F-TC-100	TC Object Pool Error	Medium	Object Pool not loaded correctly.	Area of Concern: Task Controller Object Pool did not load correctly.
A-UT-100	UT Aux Input Enable Failure	Medium	The input shown above could not be enabled. The input device indicated error or bad status. Check auxiliary assignments in the ISOBUS card.	Area of Concern: Universal Terminal Auxiliary Input #1 on device 2 could not be enabled; error code 3. Auxiliary assignments likely did not complete. Check auxiliary assignments in the ISOBUS card.
A-ISO-101	Controller Type Change	Low	A product or prescription is unassigned	Area of Concern: Task Controller A controller type change has been detected and any incompatible product assignments have been removed. Review all product and prescription assignments in the “Operations” screen for changes
F-GNSS-101	GNSS Position Lost	Medium	The GNSS receiver is unable to determine position, or position accuracy is very low.	Area of Concern: Guidance and GNSS Move the vehicle to an area with a clear view of the sky, away from buildings or trees.
F-TC-101	TC - Communication lost	Medium	TC lost communication with Implement ECU. Check Connections	Area of Concern: Task Controller Task Controller lost communication with implement ECU. Inspect connections.
A-UT-101	UT Aux Input Enable Timeout	Medium	The input shown above could not be enabled. Check auxiliary assignments in the ISOBUS card.	Area of Concern: Universal Terminal Auxiliary Input #1 on device 2 could not be enabled (timeout). Auxiliary assignments likely did not complete. Check auxiliary assignments in the ISOBUS card.

Code	Title	Severity	Message	Description
A-GNSS-102	Drive to Determine Heading	Low	Speed up or slow down to allow system to determine the heading	Driving is required for GNSS to initialize and determine position and heading. Ensure that the GNSS receiver is secured in the proper location and orientation.
F-TC-102	TC- Task is NOT running	Low	Task is Paused. Resume the Task	Area of Concern: Task Controller Trigger: Task is paused and Master Apply is turned ON, OR Task is paused and implement work source switch is enabled, OR coverage logging UDW is turned ON. Task is paused and implement work source switch is enabled, OR coverage logging UDW is turned ON. Current task is paused. Resume the task.
A-UT-102	UT Aux Assignment Conflict	Medium	The assignment shown above was removed due to conflicts. Check auxiliary assignments in the ISOBUS card.	Area of Concern: Universal Terminal Auxiliary assignments have been removed or could not be established due to conflicts and/or change of system configuration. First unassigned function (of 1 total): #2 at device 3. Check auxiliary assignments in the ISOBUS card.
F-GNSS-103	GNSS Accuracy Low	Low	The estimated accuracy of the best position is below the setting for primary correction.	Area of Concern: Guidance and GNSS Move the vehicle to an area with a clear view of the sky, away from buildings or trees.
F-UT-103	UT Safety Check Fault	High	M4 Safety Monitor detected a critical system condition.	Area of Concern: Universal Terminal
A-UT-104	UT Object Pointer Circular Reference	Medium	While validating an uploaded pool, an object pointer circle reference was detected	Area of Concern: Universal Terminal An Object Pointer with ID 3 has a circular reference to itself.
A-PF-105	PCM System Memory 90% Full	Low	The PCM has reached 90% storage memory capacity.	Area of Concern: Data management Consider archiving data on the USB device and removing unwanted files in the Data Management screen.
F-GNSS-105	GNSS Receiver Configuration Error	Medium	There is a GNSS receiver configuration error.	Area of Concern: Guidance and GNSS Restart the system. See your CASE IH dealer if the issue persists. Check software versions.
A-UT-105	UT Command/ Macro Execution Error	Medium	A command or macro execution was finished with errors.	Area of Concern: Universal Terminal
A-GNSS-106	No RTK subscription	Low	Your RTK subscription has expired.	Area of Concern: Guidance and GNSS Disable the RTK correction on the “GNSS Setup” screen, or contact your RTK subscription provider to renew your subscription.

Code	Title	Severity	Message	Description
A-PF-106	PCM System Memory Full	Medium	Data logging disabled. Archive data on device and remove unwanted files in Data Management screen.	Area of Concern: Data management The PCM Precision Farming storage memory full. Archive data on the USB device and remove unwanted files in the Data Management screen.
A-UT-106	UT Aux Input Disable Failure	Medium	The input shown above could not be disabled. The input device indicated error or bad status. Check auxiliary assignments in the ISOBUS card.	Area of Concern: Universal Terminal Auxiliary Input #1 on device 2 could not be disabled; error code 3. Check auxiliary assignments in the ISOBUS card.
A-GNSS-107	GNSS Correction Service Subscription has expired	Low	Your GNSS correction service subscription has expired.	Area of Concern: Guidance and GNSS Area of Concern: Guidance and GNSS Disable the expired subscription on the “GNSS Setup” screen, or contact your subscription provider to renew your subscription.
A-UT-107	UT Aux Input Disable Timeout	Medium	The input shown above could not be disabled. Check auxiliary assignments in the ISOBUS card.	Area of Concern: Universal Terminal Auxiliary Input #1 on device 2 could not be disabled (timeout). Check auxiliary assignments in the ISOBUS card.
A-GNSS-108	GNSS Receiver Set to Not Installed	Medium	The GNSS receiver is set to Not Installed.	Area of Concern: Guidance and GNSS Go to the “GNSS & Guidance” card under the GNSS tab and change the setting to “Installed.”
A-UT-108	UT Aux Functions Removal	Medium	All auxiliary input mappings for the implement shown above have been removed by the implement. Check auxiliary assignments in ISOBUS card!	Area of Concern: Universal Terminal Auxiliary automatic assignment (Preferred Assignment) failed; error code 3, faulty object id 1 on device 2. Check auxiliary assignments in the ISOBUS card.
A-UT-109	UT Aux Inputs Removal	Medium	All auxiliary mappings for the auxiliary input device shown above have been removed. Check auxiliary assignments in ISOBUS card!	Area of Concern: Universal Terminal All Auxiliary assignments to inputs on device 1 have been removed. Check auxiliary assignments in the ISOBUS card.
A-G-110	No Communication with Implement GNSS receiver	Medium	Implement GNSS receiver message not present on the CAN bus.	Area of Concern: Autoguidance Check implement receiver connections with receiver and cycle power. Check vehicle fuses and ensure that the receiver is getting power.
A-UT-110	UT Implement Version Change	Medium	The implement or client shown above has changed its ISOBUS Version.	Area of Concern: Universal Terminal
F-UT-111	UT Implement Reboot/Restart	Medium	The implement or client shown above has performed a reboot/restart.	Area of Concern: Universal Terminal
F-UT-112	UT Out of Memory	High	The UT has run out of memory. Stop all implement operations.	Area of Concern: Universal Terminal

Code	Title	Severity	Message	Description
A-UT-113	UT Parser Failure	Medium	Parser failure during upload of user interface data. Last good object id was xx. Failed object ID may be xx.	Area of Concern: Universal Terminal
A-GNSS-114	Position Recall Failed	Low	The vehicle was moved prior to the completion of initialization.	Area of Concern: Guidance and GNSS GNSS position and heading will be ready sooner if the vehicle is not moved during the “Position Recall in Progress” message.
A-UT-114	UT Circular Reference	Medium	Circular object reference, Parent Object xx, Child Object xx.	Area of Concern: Universal Terminal
A-G-115	Swath Calculations in Progress. Please Wait.	Low	The system is calculating swath data.	Area of Concern: Autoguidance Engagement will be possible when swath calculations are complete.
A-UT-115	UT Grammar Error	Medium	Grammar error, Parent Object xx, Child Object xx	Area of Concern: Universal Terminal
A-UT-116	Diagnostic Query Failure	Low	An error occurred while reading diagnostic information from an ISOBUS implement. Contact implement manufacturer.	Area of Concern: Universal Terminal An error occurred while reading diagnostic information from an ISOBUS implement. Contact implement manufacturer.
A-TC-117	TC - Client Pool Rejected	Medium	Task Controller DDOP failure: Client pool rejected. Check with implement manufacturer.	Area of Concern: Task Controller The system rejected the TC object pool being sent by the implement. There are numerous causes. Something within the object pool is not following the ISO standard and the system cannot fully read it. Contact your dealer.
A-UT-117	UT Attribute Validation Error	Medium	Validation of an object attribute has failed.	Area of Concern: Universal Terminal
F-UT-118	UT Implement Timeout	Medium	The implement or client shown above has stopped communicating with the UT.	Area of Concern: Universal Terminal The connection between the UT and device 1 has been lost.
A-TC-119	TC – DDOP Parsing Failure	Medium	Task Controller failure to parse Device Descriptor Object Pool (DDOP) data. Check with implement manufacturer.	Area of Concern: Task Controller The system rejected the TC object pool being sent by the implement. There are numerous causes. Something within the object pool is not following the ISO standard and the system cannot fully read it. Contact your dealer.
A-UT-119	UT Implement Deletion	Medium	The user interface for the implement or client shown above has been removed from the UT.	Area of Concern: Universal Terminal
A-G-120	No Swath is within 1/2 the Swath Width	Low	The vehicle is more than one-half of the swath width away from the selected swath. The vehicle has driven past the swath extensions. In a spiral swath pattern, the vehicle is in the midst of the innermost swaths, causing the software to limit any further swaths.	Area of Concern: Autoguidance Align the vehicle more closely to the swath.

Code	Title	Severity	Message	Description
F-UT-120	UT Duplicate instances	Medium	One or more Universal Terminals were detected on the network with the same UT Number as this UT. The UT Number must be unique. Correct this in the ISOBUS Setup card.	Area of Concern: Universal Terminal There are multiple UTs with this UT's number (#1) active on the ISOBUS. Please change UT numbers to make them unique.
A-UT-121	UT Aux Assign Rejection	Medium	The implement has rejected the auxiliary assignment shown above. Check auxiliary assignments in ISOBUS card.	Area of Concern: Universal Terminal Auxiliary assignment of input #1 on device 2 to function #3 on device 4 was rejected by the client; error code 5. Check auxiliary assignments in the ISOBUS card.
A-UT-122	UT Aux Assign Timeout	Medium	The assignment shown above may have failed to take effect. Check auxiliary assignments in ISOBUS card.	Area of Concern: Universal Terminal Auxiliary assignment of input #1 on device 2 to function #3 on device 4 failed (timeout). Check auxiliary assignments in the ISOBUS card.
A-UT-123	UT Aux Removal Rejection	Medium	The implement has rejected the removal of the auxiliary function shown above. Check auxiliary assignments in ISOBUS card.	Area of Concern: Universal Terminal Auxiliary assignment of function #1 on device 2 could not be removed (client rejected); error code 3. Check auxiliary assignments in the ISOBUS card.
A-TC-123	TC - Duplicate Task Controller Number	Medium	Multiple Task Controllers (TC) were detected on the bus with the same TC number.	Area of Concern: Task Controller The TC number must be unique.
A-TC-124	TC - Inconsistent Implement Width	Low	The implement is reporting a controller width that is not aligned with child geometry.	Area of Concern: Task Controller The boom width does not match the width of the child sections or drives. If the measurement is not correct, contact your implement manufacturer.
A-TC-125	TC - Implement Data Lost	Medium	Unable to create one or more objects for this implement.	Area of Concern: Task Controller One or more of the implement creation steps failed to save to the database.
A-UT-124	UT Aux Removal Timeout	Medium	The assignment for the function shown above may not have been removed. Check auxiliary assignments in ISOBUS card.	Area of Concern: Universal Terminal Auxiliary assignment of function #1 on device 2 could not be removed (timeout). Check auxiliary assignments in the ISOBUS card.
A-UT-125	UT Reference Validation Error	Medium	Validation of a child object reference has failed	Area of Concern: Universal Terminal
A-UT-131	UT connection monitoring disabled	Low	Permanent connection mode is active; UT is in special/debug mode	Area of Concern: Universal Terminal UT is in debug mode. Implement connections are not being monitored for failure.
A-UT-132	UT pool validator disabled	Low	The pool validator module is disabled by configuration; UT is in special/debug mode	Area of Concern: Universal Terminal

Code	Title	Severity	Message	Description
A-UT-133	UT strict implement version checking disabled	Low	Strict checking of implement's UT objects and commands is disabled; UT is in special/debug mode	Area of Concern: Universal Terminal
A-UT-134	UT no pool data	Low	An end of object pool message was received but no previous pool data upload occurred	Area of Concern: Universal Terminal
A-G-135	End is too Far from Beginning	None	The end point of a spiral swath was not recorded close enough to the start point.	Area of Concern: Autoguidance Check the map to verify the system-generated line between the stop point and the start point is acceptable. If it is acceptable, press the “Done” button. If is not acceptable, press the “Drive” button.
A-UT-135	UT duplicate object ID	Medium	The same object ID was found in a single pool upload chunk multiple times	Area of Concern: Universal Terminal
A-UT-137	UT No Working Set Object	Medium	An activated pool does not contain a required Working Set object	Area of Concern: Universal Terminal
A-UT-138	UT Multiple Working Set Objects	Medium	An activated pool contains more than the one allowed Working Set objects	Area of Concern: Universal Terminal
F-UT-139	UT CAN Connection Failure	High	CAN Bus Manager could not be successfully opened by the UT application. Communications with any implement clients may not be possible.	Area of Concern: Universal Terminal CAN interface hardware could not be opened.
F-UT-140	ISOBUS Implement Connection Error	Medium	Implement does not have a properly established UT connection but is commanding the UT. Implement may not be compatible with UT.	Area of Concern: Universal Terminal
A-G-141	Calibration in Reverse Not Allowed	Low	Automatic reverse operation is not supported during calibration.	Area of Concern: Autoguidance Place the transmission in forward.
F-UT-141	No Primary UT	High	No primary UT Found! The ISOBUS network must have a primary UT (instance #1).	Area of Concern: Universal Terminal There is no Primary UT active on the ISOBUS. (this one uses function instance #1). Please change the function instance of one UT to be primary (i.e. UT number 1).
A-UT-142	UT Multiple Working Set Special Controls Objects	Medium	An activated pool contains more than the one allowed Working Set Special Controls object	Area of Concern: Universal Terminal
A-UT-143	UT Multiple Object Label Reference List Objects	Medium	An activated pool contains more than the one allowed Object Label Reference List object.	Area of Concern: Universal Terminal
F-UT-144	UT API Version Mismatch	High	API Version mismatch between UT and UT UDW. Reload software.	Area of Concern: Universal Terminal

Code	Title	Severity	Message	Description
A-G-145	Too Fast to Engage	Low	The vehicle is traveling at a speed that is greater than allowed for engaging.	Area of Concern: Autoguidance Slow down while trying to engage.
F-UT-145	ISB Timeout	Medium	An ISB source has timed out and is not sending the ISB heartbeat message	Area of Concern: Universal Terminal
A-PF-154	Prescription Layers unassigned	Low	The current Prescription has unassigned layers	Area of Concern: Rate and Section The current field has unassigned prescriptions, and there are controllers with a matching product form without a prescription assigned as the system transitions into work.
A-G-165	Heading Error to Swath too High	Low	The vehicle is at an extreme angle to the swath direction.	Area of Concern: Autoguidance Reduce the heading angle of the vehicle to the swath, or reduce speed to increase the probability of acquiring the swath.
A-G-170	Operator Steering Manual Override Detected	Low	Steering wheel movement was detected when trying to engage or after engagement.	Area of Concern: Autoguidance Do not move the steering wheel during engagement. Do not move steering controls after engagement.
A-PF-170	Export Failed. Destination Drive Full.	Low	Data export has failed. The destination storage drive is full.	Area of Concern: Data management Data export has failed due to insufficient space on storage drive. Clear space on storage drive and retry export.
A-PF-171	Export Failed. Destination Drive Removed.	Low	Data export has failed. The destination storage drive was removed.	Area of Concern: Data management Data export has failed due to removal of destination storage drive. Insert storage drive and retry export.
A-PF-172	Source Drive Removed	Low	Data import has failed. The source storage drive was removed	Area of Concern: Data management Leave the source storage drive inserted during imports.
A-PF-173	Import Failed	Low	Data import incomplete	Area of Concern: Data management Attempt the data import again. Determine the cause of the incomplete data import. See your CASE IH dealer if you need assistance.
A-PF-174	Prescription size exceeds limit	Medium	Rx exceeds the maximum size allowed.	Area of Concern: Data management The prescription size exceeds the maximum size allowed. Decrease prescription file size.
A-G-175	Cross Track Error	None	Cross track error is too large to remain engaged in automatic mode.	Area of Concern: Autoguidance Drive the vehicle closer to the selected swath and then re-engage the autoguidance. If the error occurs often, determine why the vehicle repeatedly veers away from the selected swath. Consult your CASE IH dealer if you require assistance.

Code	Title	Severity	Message	Description
A-PF-175	Export Failed	Low	Data export incomplete	Area of Concern: Data management Attempt the data export again. Determine the cause of the incomplete data export. See your CASE IH dealer if you need assistance.
A-PF-176	Duplicates Designators Renamed	Low	File contains duplicate designators which have been automatically renamed.	Area of Concern: Data management Duplicate designators have been automatically renamed for uniqueness by appending "(#)" starting with "(2)."
A-PF-177	Designators truncated	Low	File contains or generates illegal length designators which have been automatically truncated.	Area of Concern: Data management Designators over 32 characters have been automatically truncated.
A-PF-178	Import Error	Low	Duplicate Designators limit exceeded	Area of Concern: Data management The import file contains too many duplicate designators and has exceeded the system limit of 999.
A-PF-179	Export Out of Memory Exception	Low	The system ran out of memory while packaging or preparing a file set for export.	Area of Concern: Data management Attempt again with fewer objects selected. ***NOTE:*** *You may not be able to export large multiswaths created from desktop software.*
A-G-185	Too Far from Recorded Swath	Low	The vehicle has traveled too far from the original swath.	Area of Concern: Autoguidance Select a new or existing field and record or use a different swath that is within **32 km** (**20 miles**) of the vehicle.
A-ISO-201	Bulk Seed High Rate	Medium	Bulk Seed High Rate	Area of Concern: Rate and Section The rate for a bulk seed controller exceeds the upper rate threshold.
F-PF-201	GNSS Accuracy Low	Medium	The GNSS position accuracy is not sufficient for automatic rate and section control.	Area of Concern: Guidance and GNSS Ensure the GNSS receiver is not obstructed.
A-ISO-202	Bulk Seed Low Rate	Medium	Bulk Seed Low Rate	Area of Concern: Rate and Section The rate for a bulk seed controller exceeds the lower rate threshold.
F-GNSS-300	Loss of Communication with RTK Radio	Medium	The GNSS receiver lost communication with RTK radio.	Area of Concern: Guidance and GNSS Communication was established, but then lost. Inspect and test the connections. Consult your CASE IH dealer if you require assistance.
A-PF-300	No Product Assigned	Medium	Assign products to all drives in “Operations” screen	Area of Concern: Rate and Section At least one drive has been detected without a product assigned, when the vehicle is in work. All drives must be assigned a product. Assign products to all drives.
A-ISO-301	Liquid High Rate	Medium	Liquid High Rate	Area of Concern: Rate and Section The rate for a liquid controller exceeds the upper rate threshold.

Code	Title	Severity	Message	Description
F-PF-301	System Speed Lost	Medium	None of the speed sources are available. The system cannot determine the system speed for **5 s**.	Area of Concern: Rate and Section Check speed sensors and related wiring. Check speed source priority list
A-ISO-302	Liquid Low Rate	Medium	Liquid Low Rate	Area of Concern: Rate and Section The rate for a liquid controller exceeds the lower rate threshold.
A-PF-302	Too Far From Field Origin	Low	Check if correct Field is selected. Create new Field if needed	Area of Concern: Rate and Section When the implement is in work, the current vehicle location was found to be more than **10000 m** (**32808 ft**) away from the origin point of the current field. This is a warning. Mapping will continue.
F-PF-303	Work Switch Source Lost	Medium	The signal from the selected work switch source is lost for more than **2 s**.	Area of Concern: Rate and Section Check the selected work switch source or select a different source.
A-PF-305	Work Switch Source Degraded	Low	The signal from the selected work switch source is not available or is lost for more than **2 s**.	Rate and Section Work may continue. Check the selected work switch source or select a different source when possible.
A-PF-306	Speed Source Lost	Low	A valid speed source goes invalid for **5 s** or more, but the system is able to use another active and valid speed source. This does not apply to when a user turns a speed source off, making it invalid.	Rate and Section Check speed sensors and related wiring. Check speed source priority list.
F-PF-308	Rate Out of Range	Medium	The rate for the sprayer controller exceeds the upper or lower rate threshold.	Rate and Section The entered rate is outside of the allowable range for this product, and has been adjusted. Check the Product Library tab in the Data card.
F-GNSS-400	No Serial Communication with GNSS Receiver	Medium	GNSS receiver messages are not present on the selected serial port	Area of Concern: Guidance and GNSS Check the receiver serial port settings and message configuration. The baud rate must be 19,200, and the GGA message must be enabled.
A-PF-400	Currently selected objects deleted	Low	The currently selected object no longer exists in the database.	Area of Concern: Data management Check the current object in the “Operations” screen.
A-ISO-401	Seed High Rate	Medium	Seed High Rate	Area of Concern: Rate and Section The rate for a seed controller exceeds the upper rate threshold.
A-ISO-402	Seed Low Rate	Medium	Seed Low Rate	Area of Concern: Rate and Section The rate for a seed controller exceeds the lower rate threshold.
A-G-440	Cannot Create Swath Due to Boundary Shape	None	The boundary has an irregular shape that prevents swath creation.	Area of Concern: Autoguidance Re-record the boundary and try again, or create a new swath.

Code	Title	Severity	Message	Description
A-G-441	Recording Error Due to GNSS Accuracy Limit, GNSS Lost, or No Heading	None	Avoid turning, stop the vehicle, and press the “Wait” button to wait until GNSS is available. Press the “Cancel” button to cancel recording of the swath pattern. The entire pattern must be recorded again.	Area of Concern: Autoguidance Avoid turning, stop the vehicle, and press the “Wait” button to wait until GNSS is available. Press the “Cancel” button to cancel recording of the swath pattern. The entire pattern must be recorded again.
A-G-442	Cannot Mark B	None	GNSS lost. Wait for GNSS to return before retrying Mark B.	Area of Concern: Autoguidance Wait for GNSS to return before retrying Mark B.
A-G-444	Tight Turns in Swath Cannot be Adjusted	Low	Turns in the recorded swath are too tight and cannot be adjusted.	Area of Concern: Autoguidance Decrease the minimum turning radius or re-record the swath with more gradual turns. To adjust the minimum turning radius, use the “Gear” button in the “Swath” menu “Manage” tab. See “Swath minimum turning radius” (**5-93**) for more information.
A-G-445	Swath and Boundary Intersect Warning	None	The swath may intersect the boundary in some locations. Use caution in areas of the boundary where sharp turns are present. Review the map to see where the swath will intersect the boundary to determine if the path is acceptable.	Area of Concern: Autoguidance Ensure the swath width and minimum turning radius setting are correct. Record the swath again.
A-G-446	Recording with Nudge	None	Choosing this swath after recording will reset the nudge values and shift the swath location. The swath will need to be nudged. Remove nudge before recording.	Area of Concern: Autoguidance This message occurs when recording a swath with a nudge value greater than 0. If the nudge is not removed, select the recorded swath and adjust the nudge value.
A-G-447	Failed to Generate Desired Number of Headland Passes	None	Ensure generated swaths are acceptable.	Area of Concern: Autoguidance In headland, closed, and square mode, additional swaths are generated only toward the inside of the pattern. The number of generated swaths must be equal to the headland count. This alarm appears when the desired number of swaths cannot be generated.
A-G-448	Circle Radius is Too Small	Low	Circle swath radius must be equal to or greater than **10.0 m** (**32.8 ft**).	Area of Concern: Autoguidance Select a circle swath with a radius equal to or greater than **10.0 m** (**32.8 ft**).
A-G-454	Swath Tight Turns Adjusted	None	The swath shapes have been adjusted for turns to meet the minimum turn radius setting. This can change the recorded swath significantly on turns. Watch for obstructions.	Area of Concern: Autoguidance This message appears when the recorded swath contains turns that are tighter than the current minimum turning radius setting. The minimum turn radius must be as large as the implement or header width. Edit the minimum turn radius.

Code	Title	Severity	Message	Description
A-G-468	Cannot Remark	Low	Swaths cannot be calculated in this area, or the requested remark cannot be applied.	Area of Concern: Autoguidance You cannot remark the innermost areas of a spiral or curve swath. Spiral swaths cannot be calculated in the innermost areas, so you cannot remark them there. Remark the swath again or reset the remark.
A-G-482	Swath Data Crosses Over or Near Itself	None	The crossed sections of the recorded swath have been deleted. If the resulting swath pattern is not acceptable, record a new swath.	Area of Concern: Autoguidance The path of the vehicle with its implement or header cannot cross itself or come within one swath width of itself when recording a swath.
F-GNSS-500	No ISO CAN Communication with GNSS Receiver	Medium	GNSS receiver messages are not present on the ISO CAN bus.	Area of Concern: Guidance and GNSS Check the receiver settings. The NMEA message PGN-129029 must be enabled and set to 20HZ in the "Serial Output" section of the GNSS card. Set the rate to 20HZ. Consult the receiver manual.
F-PF-500	No Selected Swath	Medium	Remote Output Enabled without Swath Selected	Area of Concern: Rate and Section The remote output functionality is ON and a swath is not selected. Before remote output functionality can be used, a straight or heading swath must be created and selected.
A-ISO-501	High Anhydrous Rate	Medium	High Anhydrous Rate	Area of Concern: Rate and Section The rate for an anhydrous controller exceeds the upper rate threshold.
F-PF-501	No Selected Boundary	Medium	Remote Output Enabled without Boundary	Area of Concern: Rate and Section The remote output switch is ON and in “Within Area” mode, and a boundary is not selected. Before remote output functionality can be used in the “Within Area” mode, a boundary must be created and selected.
A-ISO-502	Low Anhydrous Rate	Medium	Low Anhydrous Rate	Area of Concern: Rate and Section The rate for an anhydrous controller exceeds the lower rate threshold.
A-G-503	Swath Too Long	Low	The swath exceeds the maximum allowed length.	Area of Concern: Autoguidance The swath recording limit for curve swath, pivot swath, and a boundary is **24.1 km** (**15.0 miles**). The AB and heading swath limit is **80.5 km** (**50.0 miles**). The pivot swath radius limit is **4.09 km** (**2.54 miles**) or **25.7 km** (**16.0 miles**) on recall. Select another swath or record the swath again.
A-G-504	Guidance Turned Off	High	The autoguidance system is turned OFF.	Area of Concern: Autoguidance Turn ON the autoguidance system.
A-G-505	Wrong Guidance Type Selected	High	The selected guidance type does not support AFS AccuTurn.	Area of Concern: Autoguidance Go to the autoguidance setup page and select a compatible guidance type.

Code	Title	Severity	Message	Description
A-G-506	Guidance Not Ready to Engage	High	The autoguidance system has an active condition that prevents engagement.	Area of Concern: Autoguidance Review the “Guidance” card in the “Diagnostics” tab in the display. Any active condition that prevents autoguidance engagement causes this warning.
A-G-507	Supported Swath Not Selected	High	The selected swath type is not compatible with AFS AccuTurn.	Area of Concern: Autoguidance Select a straight, heading, or curve swath.
A-G-508	Swath does not Intersect Trigger	High	The active swath and the selected trigger do not intersect to perform automatic turn.	Area of Concern: Autoguidance Select or create a new swath. Curve swaths may not intersect the trigger in all field geometry. For all supported swaths, both the outgoing and incoming swaths must intersect a trigger, including when the vehicle is not within an outer boundary.
A-G-509	Verify Maximum Steering Angle	Low	The implement measurements changed.	Area of Concern: Autoguidance On the “Guidance” setup screen, make sure that the maximum steering angle is set to the largest angle that does not cause vehicle or implement damage.
A-G-510	No boundary selected when using boundary trigger	Low	You chose the boundary trigger, but did not select a field boundary.	Area of Concern: Autoguidance Record or select a field boundary.
A-G-511	No headland selected when using headland trigger	Low	No active headland selected.	Area of Concern: Autoguidance Create a headland boundary from desired boundary.
A-G-512	Steering Angle Set to Default	Low	You have not configured the maximum steering angle.	Area of Concern: Autoguidance On the “Guidance” setup screen, make sure that maximum steering angle is set to the largest angle that does not cause vehicle or implement damage. This warning appears if you never changed the maximum steering angle from the default value.
A-G-513	Not Engaged	Low	You must engage the autoguidance on a swath to initiate AFS AccuTurn.	Area of Concern: Autoguidance Engage on a swath that intersects the desired trigger. A compatible guidance type is selected but not engaged.
A-G-514	No End of Swath Trigger Wen Using End of Swath	Low	There is no active end of swath trigger.	Area of Concern: Autoguidance Create an end of swath trigger using the “Turn Now” button.
A-G-525	No Swath	Low	No swath has been selected as active yet.	Area of Concern: Autoguidance Create a new swath. Select another swath for use. De-select and then re-select the current swath.
A-G-530	Swath Width Too Low	Low	Swaths were not propagated because the swath width is too low. The swath width comes from the implement. An ISO implement may take longer to load.	Area of Concern: Autoguidance Make sure that the implement is selected and the swath width is set properly.

Code	Title	Severity	Message	Description
A-G-535	Too Fast	None	The vehicle forward traveling speed is greater than allowable limits to remain engaged in automatic steering.	Area of Concern: Autoguidance Reference the operator manual for your vehicle for autoguidance speed limits.
A-G-540	Reverse Speed Threshold Exceeded	None	The vehicle speed exceeds the engaged range for reverse operation.	Area of Concern: Autoguidance Drive at slower speeds when reversing.
A-G-545	Swath Acquisition Error	None	Vehicle has traveled too far and not acquired the swath.	Area of Concern: Autoguidance Drive closer to the selected swath before engaging the autoguidance system.
A-G-550	Too Far Past End of Swath	None	The vehicle has traveled past the end of a swath.	Area of Concern: Autoguidance Use manual steering until you engage on the next swath.
A-G-551	Guidance Speed Mismatch	None	Mismatch between wheel speed sensor and GNSS.	Area of Concern: Autoguidance Check the tire radius. Reset the receiver in the Diagnostics menus if the problem continues.
A-G-552	GNSS Position Jump	None	There was an abrupt change in the GNSS position.	Area of Concern: Autoguidance Reset the receiver in the Diagnostics menus if the problem continues. See “Resetting the receiver” (**6-17**).
A-G-553	GNSS Heading Error	None	There was an abrupt change in GNSS heading.	Area of Concern: Autoguidance Reset the receiver in the Diagnostics menus if the problem continues. See “Resetting the receiver” (**6-17**).
A-G-554	Wheel Angle Sensor Error	None	There was a mismatch in the curvatures generated between the wheel angle sensor and the GNSS system.	Area of Concern: Autoguidance Check the wheel angle sensor connection. If the problem continues, contact your CASE IH dealer.
A-G-555	Wheel Calibration Center Offset Too Large	None	An error occurred during the wheel angle sensor calibration.	Area of Concern: Autoguidance Perform another wheel angle sensor calibration.
A-G-556	Cannot Command to Set Max Steering	None	The maximum steering angle is set incorrectly.	Area of Concern: Autoguidance Set the maximum steering angle to the lower of the left or right values.
A-G-565	Safety Statement Not Accepted	Low	Safety statement has not been accepted during this power cycle/user login. A guest user is not allowed to engage the autoguidance.	Area of Concern: Autoguidance A non-guest user must "Accept" the safety statement upon requesting engagement.
A-G-585	Guidance GNSS Accuracy Limit	Low	GNSS position not accurate enough for autoguidance or no primary correction.	Area of Concern: Autoguidance Wait for better accuracy, or change the primary correction source.
A-G-590	Swath Not Long Enough	Low	The current swath is not long enough.	Area of Concern: Autoguidance Re-record the swath. ***NOTE:*** *This can occur when using imported swaths.*
A-G-595	Swath Data Error	Low	There are not enough swath points, or the swath changed.	Area of Concern: Autoguidance Re-select the swath or select another swath.
F-G-600	Guidance Communication Error	Low	The PCM module has encountered an error.	Area of Concern: Autoguidance Restart the vehicle. If the problem continues, contact your CASE IH dealer.

Code	Title	Severity	Message	Description
A-V2V-600	V2V Communication Mismatch	Low	Paired vehicle communication is not compatible.	Area of Concern: Guidance and GNSS Ensure paired vehicles have compatible software versions and firmware.
F-G-601	Guidance Communication Error	Low	The PCM module has encountered an error.	Area of Concern: Autoguidance Restart the vehicle. If the problem continues, contact your CASE IH dealer.
A-ISO-601	High Granular Rate	Medium	High Granular Rate	Area of Concern: Rate and Section The rate for a granular controller exceeds the upper rate threshold.
A-ISO-602	Low Granular Rate	Medium	Low Granular Rate	Area of Concern: Rate and Section The rate for a granular controller exceeds the lower rate threshold.
A-G-605	Guidance Disabled	Low	Autoguidance is not unlocked, or the guidance switch is not enabled.	Area of Concern: Autoguidance Make sure autoguidance is unlocked and enabled in the Autoguidance setup page.
A-V2V-605	Lost Wi-Fi	Medium	Lost communication with Wi-Fi network. Possibly too far from network or Wi-Fi module off.	Area of Concern: Guidance and GNSS Ensure Wi-Fi is enabled or drive closer to network.
A-G-606	GNSS Guidance Disabled	Low	GNSS Guidance is locked.	Area of Concern: Autoguidance Unlock GNSS Guidance.
A-G-610	Incorrect GNSS Receiver Installed	Low	The guidance function is only available with specific receivers.	Area of Concern: Autoguidance Install a guidance-capable receiver.
A-V2V-610	Lost Communication with Paired Vehicle	Medium	Either vehicle has communications issue.	Area of Concern: Guidance and GNSS Paired vehicle is possibly out of range, powered off, obstacle between vehicles, or Wi-Fi module powered off.
F-G-615	No Communication with Steering Valve	Low	Steering valve messages are not present on the CAN bus.	Area of Concern: Autoguidance Restart the vehicle. If the problem continues, contact your CASE IH dealer.
A-G-620	ISO Bus Guidance Engaged	Low	Guidance is not allowed when ISO Bus guidance is enabled.	Area of Concern: Autoguidance Disengage ISO Bus guidance.
A-V2V-620	Incorrect Paired Vehicle ID	Medium	Paired vehicle is not reporting as it's paired, or is not reporting as paired vehicle.	Area of Concern: Guidance and GNSS Un-pair and re-pair with vehicle.

Code	Title	Severity	Message	Description
A-G-625	System Initializing	Low	Guidance is not available during system startup.	Area of Concern: Autoguidance Allow the system to complete the startup process. This condition is active while the system is starting up. Guidance is not allowed to engage while the system is not yet ready to engage or fully booted. This condition is active for **2 min** after startup or until the software sees the cause of the inability to engage. This reason is only displayed in the guidance diagnostics page because the cannot-engage message cannot be opened, since it has not yet received or cannot receive the cannot-engage reasons list. The diagnostics page is populated by the display. The engage button is grayed out when the first signal has not yet been received.
A-V2V-625	Paired Vehicle Fault	Medium	Fault exists on the paired vehicle that doesn't allow V2V operation.	Area of Concern: Guidance and GNSS Paired vehicle should attend to the fault to resolve issue.
A-G-630	No Communication with Steering Controller	Low	Steering controller messages are not present on the CAN bus.	Area of Concern: Autoguidance Cycle power. Check for vehicle faults.
F-G-635	No Communication with Primary Display	Low	The system has lost communications with the primary display.	Area of Concern: Autoguidance Restart the vehicle. If the problem continues, contact your CASE IH dealer.
F-G-641	Electric Motor Phase Not Found Error	Low	Electric Motor could not find phase.	Area of Concern: Autoguidance Clear faults through the fault drawer. If error does not clear after some time then restart the vehicle to recover. If the problem continues, contact your CASE IH dealer.
F-G-642	Electric Motor Under Voltage Error	Low	Electric Motor detected a low input voltage.	Area of Concern: Autoguidance Clear faults through the fault drawer. If error does not clear after some time then restart the vehicle to recover. If the problem continues, contact your CASE IH dealer.
F-G-643	Electric Motor Over Voltage Error	Low	Electric Motor detected a high input voltage.	Area of Concern: Autoguidance Clear faults through the fault drawer. If error does not clear after some time then restart the vehicle to recover. If the problem continues, contact your CASE IH dealer.
F-G-644	Electric Motor Driver Overload Error	Low	Electric Motor detected a driver overload probably caused by insufficient torque or excessive current drawn.	Area of Concern: Autoguidance Clear faults through the fault drawer. If error does not clear after some time then restart the vehicle to recover. If the problem continues, contact your CASE IH dealer.

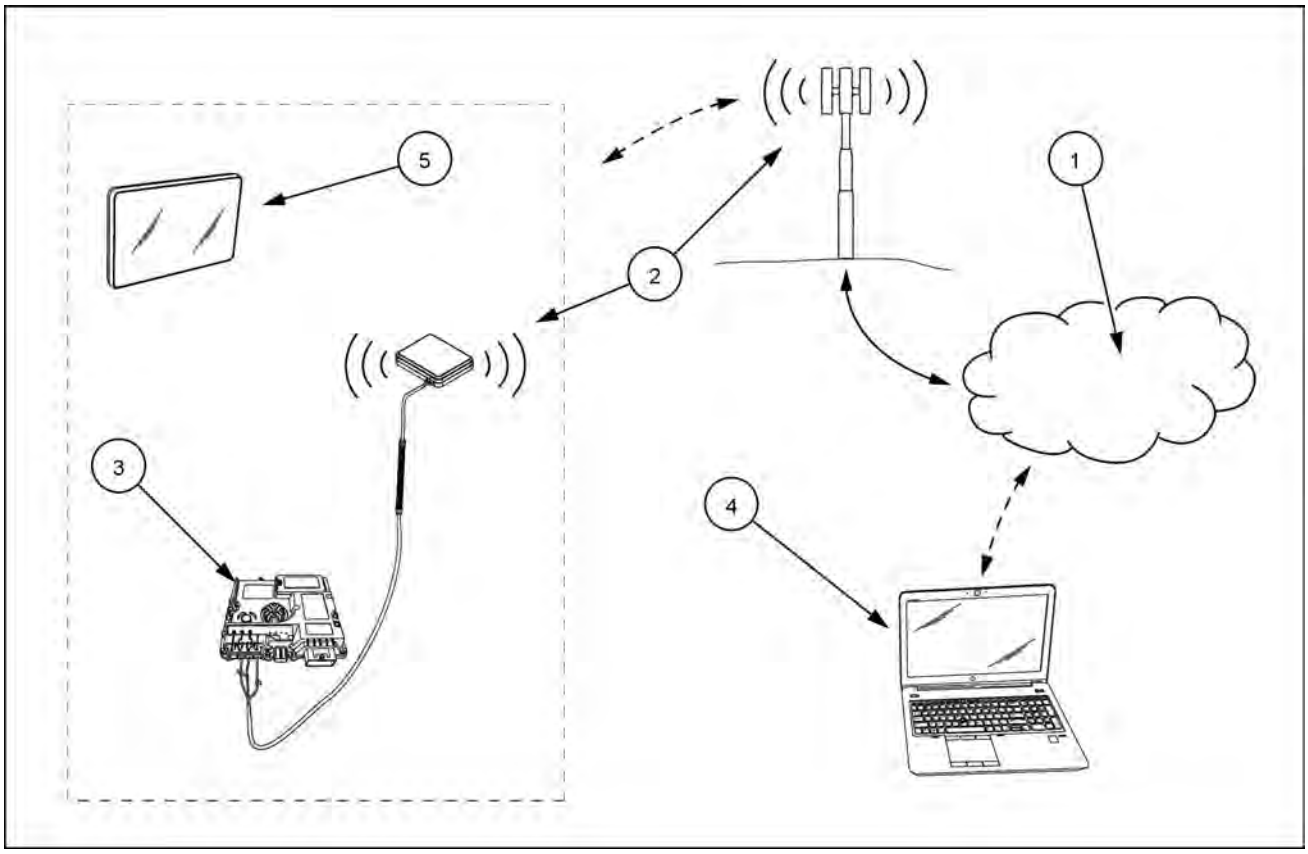
Code	Title	Severity	Message	Description
A-G-645	Software Installation in Progress	Low	Guidance is not allowed during software installation.	Area of Concern: Autoguidance Complete the software installation. Restart the system.
F-G-645	Electric Motor Driver Over Current Error	Low	Electric Motor Driver detected a high input current.	Area of Concern: Autoguidance Send periodic 'clear faults" message. If error does not clear after some time then restart vehicle to recover. If problem persists, contact your CASE IH dealer.
F-G-646	Electric Motor Motor Sensor Error	Low	Electric motor detected an error with a motor sensor.	Area of Concern: Autoguidance Send periodic 'clear faults" message. If error does not clear after some time then restart vehicle to recover. If problem persists, contact your CASE IH dealer.
F-G-647	Electric motor Driver Over temperature Error	Low	Electric Motor driver's temperature is too high.	Area of Concern: Autoguidance Send periodic 'clear faults" message. If error does not clear after some time then restart vehicle to recover. If problem persists, contact your CASE IH dealer.
A-V2V-660	Docked Vehicle Not Reporting Docked	Medium	Docked vehicle is not reporting itself as docked.	Area of Concern: Guidance and GNSS Docked vehicle is not reporting itself as docked.
A-G-700	Calibrate Wheel Angle Sensor	Low	The wheel angle sensor is not calibrated.	Area of Concern: Autoguidance Perform the wheel angle sensor calibration.
A-ISO-701	High Plant Rate	Medium	High Plant Rate	Area of Concern: Rate and Section The rate for a plant controller exceeds the upper rate threshold.
A-ISO-702	Low Plant Rate	Medium	Low Plant Rate	Area of Concern: Rate and Section The rate for a plant controller exceeds the lower rate threshold.
A-G-705	Calibrate Steering Dead Zone	Low	The dead zone calibration has not been completed.	Area of Concern: Autoguidance Perform a steering dead zone calibration.
A-G-715	Calibration Active	Low	A row sensor, dead zone, or wheel angle sensor calibration is active.	Area of Concern: Autoguidance Complete the calibrations before engaging the autoguidance.
A-G-716	System Exited Calibration	None	Calibration has been completed or cancelled.	Area of Concern: Autoguidance Allow the calibrations to complete before exiting the calibration procedures.
A-G-717	Turn Vehicle Around	Low	Current vehicle heading NOT within +/- **90°** of calibration swath, facing the calibration area.	Area of Concern: Autoguidance Turn vehicle around to the direction of the calibration area.
A-G-718	Vehicle Not Aligned With Swath	Low	Current vehicle heading NOT within +/- **30°** of calibration swath, facing the calibration area.	Area of Concern: Autoguidance Align the vehicle more closely to the swath.
A-G-719	Vehicle Too Far From Swath	Low	Cross track error is more than **1.00 m** (**39.37 in**)	Area of Concern: Autoguidance Align the vehicle more closely to the swath.
A-G-720	Vehicle Too Close To Start Point – Move Back	Low	Vehicle is too close to the calibration area.	Area of Concern: Autoguidance Move vehicle further back from the start point.

Code	Title	Severity	Message	Description
A-ISO-801	Deep Depth	Medium	Deep depth	Area of Concern: Rate and Section The feedback for a depth controller exceeds the upper target threshold.
A-ISO-802	Shallow Depth	Medium	Shallow depth	Area of Concern: Rate and Section The feedback for a depth controller exceeds the lower target threshold.
A-G-900	System Fault	None	There is a vehicle fault impacting guidance engagement.	Area of Concern: Autoguidance Investigate and clear the faults on the Fault Page screen. Contact your CASE IH dealer if the faults cannot be cleared.
A-ISO-901	High Downforce	Medium	High downforce	Area of Concern: Rate and Section The feedback for a downforce controller exceeds the upper target threshold.
A-ISO-902	Low Downforce	Medium	Low downforce	Area of Concern: Rate and Section The feedback for a downforce controller exceeds the lower target threshold.
F-G-905	Steering Controller Disengaged	None	The steering valve disengaged guidance.	Area of Concern: Autoguidance Restart the vehicle. Contact your CASE IH dealer if assistance is needed.
F-G-906	Steering Controller Safe State	None	The steering valve cannot engage.	Area of Concern: Autoguidance Restart the vehicle. Contact your CASE IH dealer if assistance is needed.
A-G-909	Electric Motor Loss of Command Error	Low	Loss of command to the electric steering motor.	Area of Concern: Autoguidance Restart the vehicle to recover. If problem continues, contact your CASE IH dealer.
A-G-910	Electric motor Loss of Communication Error	Low	Loss of communication with the electric steering motor.	Area of Concern: Autoguidance Check roading switch. If roading switch is in the ON position, switch it to the OFF position to recover. If roading switch is in the OFF position, restart the vehicle to recover. If problem continues, contact your CASE IH dealer.
A-G-911	Electric Motor Calibration Paused or Cancelled	Low	Calibration process has been paused or cancelled before reaching completion.	Area of Concern: Autoguidance If paused, resume calibration process until it is completed successfully. If cancelled, restart the general calibration process and complete it successfully.
A-G-912	Electric Motor Calibration Incomplete Error	Low	Electric motor calibration was not completed.	Area of Concern: Autoguidance Start electric motor calibration via display and continue until completion.
A-G-913	Electric Motor Center Convergence	Low	Electric Motor has not converged on a zero-value (straight) heading.	Area of Concern: Autoguidance Keep driving straight until center convergence is complete. If after some time it does not complete, perform the calibration procedure again.
A-G-915	Operator Not Present	None	Operator did not acknowledge the operator presence pop up on display.	Area of Concern: Autoguidance Re-engage guidance.

Code	Title	Severity	Message	Description
A-G-917	Manual Engagement During ES Calibration	None	Operator tried to manually engage in Autoguidance while Electric steering Calibration was in progress.	Area of Concern: Autoguidance If in manual portion of calibration, finish the manual portion and continue to the automatic portion. If paused during the automatic portion, click “Resume” button via display.
A-G-920	Implement Receiver Location Check	Low	Position of the implement DRP derived from user entered receiver location has a large delta from DRP position based on known reference.	Area of Concern: Autoguidance Check measurements from implement receiver to implement DRP.
A-G-921	Vehicle going in Reverse Implement guidance	Low	The vehicle going in reverse can cause the implement to quickly lose accurate heading.	Area of Concern: Autoguidance Disable implement guidance if vehicle goes in reverse and re-establish once heading is reasonable.
A-ISO-1001	High Pressure	Medium	High pressure	Area of Concern: Rate and Section The feedback for a pressure controller exceeds the upper target threshold.
A-ISO-1002	Low Pressure	Medium	Low pressure	Area of Concern: Rate and Section The feedback for a pressure controller exceeds the lower target threshold.
A-ISO-1101	High Gang Angle	Medium	High Gang Angle	Area of Concern: Rate and Section The feedback for Gang Angle Controller exceeds the upper target threshold.
A-ISO-1102	Low Gang Angle	Medium	Low Gang Angle	Area of Concern: Rate and Section The feedback for Gang Angle Controller exceeds the lower target threshold.

Remote services

Remote assistance service



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***NOTE: AFS Connect™** functions may not be available in all markets due to connectivity restrictions.*

The remote assistance **(1)** service provides your CASE IH dealer a means of remotely performing diagnostics and other actions on your vehicle, using the vehicle cellular connection **(2)** with the Processing & Connectivity Module (PCM) **(3)**. Your CASE IH dealer can perform the following actions on your vehicle without the need for a service call:

- Review and clear fault codes that are inactive
- Examine software versions and update software on vehicle controllers
- Modify vehicle configurations in the controller software
- Monitor the operating parameters in the vehicle

The **AFS Connect™** display viewing feature provides this capability by allowing a remote computer **(4)** logged into the **AFS Connect™** portal to establish a connection to the display **(5)**. This process uses the vehicle cellular connection with the Processing and Connectivity Module (PCM).

The **AFS Connect™** support applications require a subscription. Consult your CASE IH dealer for more information.

Remote sessions require coordination with your CASE IH dealer. Once you have coordinated a remote session with your dealer, you initiate the session in the display. Your dealer then acknowledges your request for a remote session. You then grant permission to your dealer to begin the remote session.

***NOTE:** Remote sessions can only be initiated at the vehicle display.*

You can discontinue a remote session at any time during the session.

Press the “Applications” icon in the top row of any display screen.

The “Applications” screen appears.

Press the “Remote Assistance Services” icon.

The “Remote Assistance Services” window appears.

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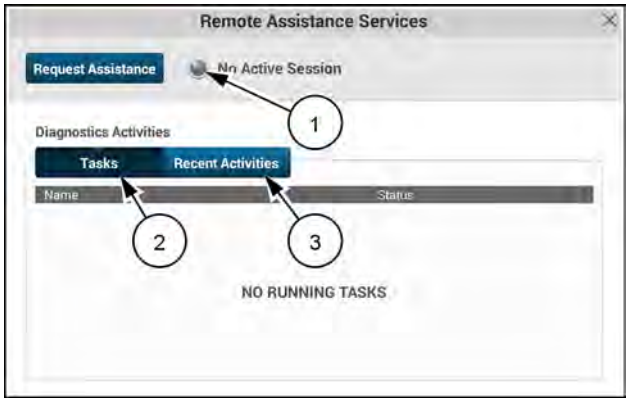
The status indicator **(1)** is gray with the annotation, “No Active Session.”

The “Diagnostics Activities” section includes a toggle that lists the following information:

- Press “Tasks” **(2)** to view the remote actions your dealer has performed in the current session.
- Press “Recent Activities” **(3)** to view the remote actions in previous sessions.



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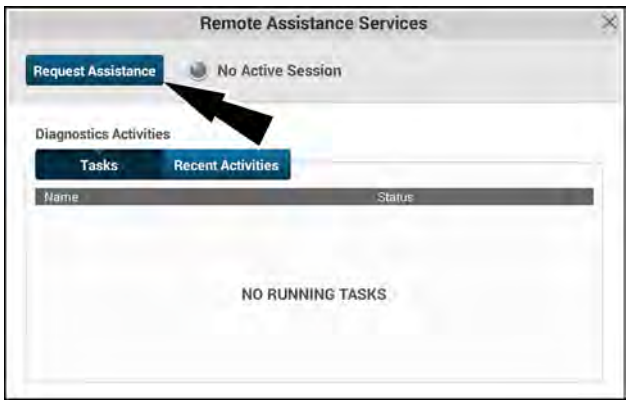
NOTE: *It is recommended you contact your CASE IH dealer before performing this step.*

Ensure the engine is not running.

Press the “Request Assistance” button.

The system uses cellular communication to establish a connection with your dealer.



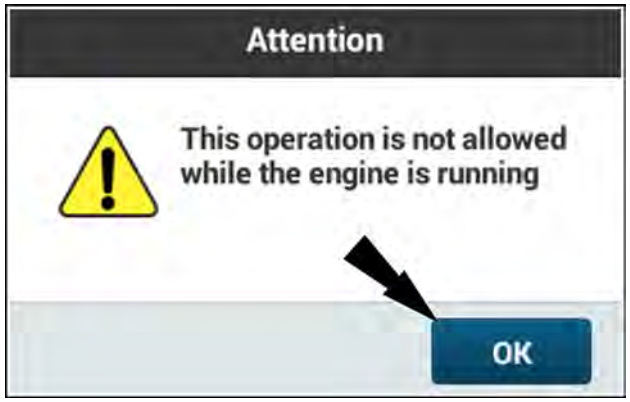
RAIL20PLM1100AA 4

If the engine is running when you attempt to initiate the **AFS Connect™** application, an error message appears.

The error message states, “This operation is not allowed while the engine is running.”

NOTE: *If necessary, start the vehicle engine after the dealer has successfully joined the remote session.*

Press the “OK” button to acknowledge the engine running condition and close the window.



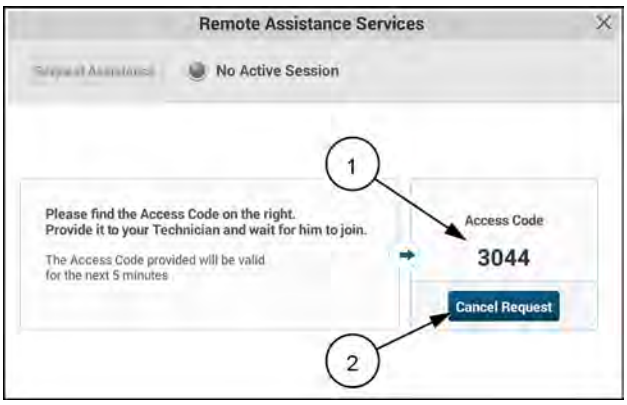
RAIL18PLM1829AA 5

When the **AFS Connect™** application establishes a session, your display generates an access code **(1)**.

Communicate the access code to your dealer.

NOTE: *Access codes are valid for* ***5 min****. If there is an interruption, the process of establishing the remote session, the access code will expire. Press the "Request Assistance" button to obtain another access code.*

If you wish to cancel the request for a remote session, press the "Cancel Request" button **(2)**.



RAIL20PLM1101AA 6

You must confirm that you wish to grant remote control of your display to your CASE IH dealer.

The confirmation screen states, "Dealer: (dealer name) is requesting a remote session. Do you want to grant remote control?"

Grant

Press the "Grant" button **(1)** to grant remote access to your dealer.

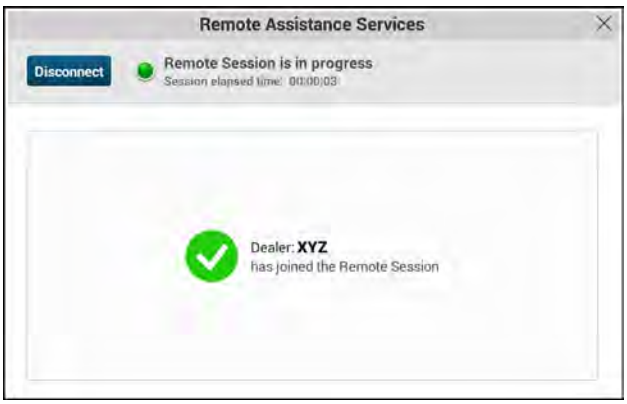
Reject

Press the "Reject" button **(2)** if you wish to discontinue the remote session.

RAIL20PLM1102AA 7

When your dealer has completed all steps necessary to establish the remote session, an acknowledgement temporarily appears stating that the dealer has joined the remote session.

NOTE: *After the dealer has joined the remote session, the vehicle engine can be started if necessary.*



RAIL20PLM1103AA 8

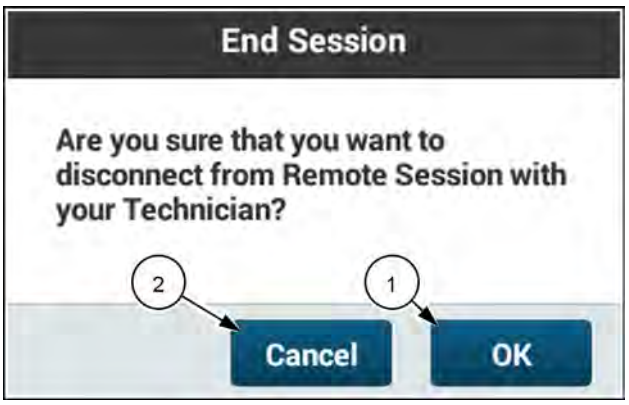
During the remote session, the status indicator **(1)** appears green with the statement, "Remote session is in progress."

Disconnect

If you wish to discontinue the remote session at any time, press the "Disconnect" button **(2)**.

RAIL20PLM1104AA 9

If you choose to disconnect the session, the “End Session” window appears.



RAIL18PLM1836AA 10

OK

Press the “OK” button **(1)** to acknowledge the disconnection and close the window.

Cancel

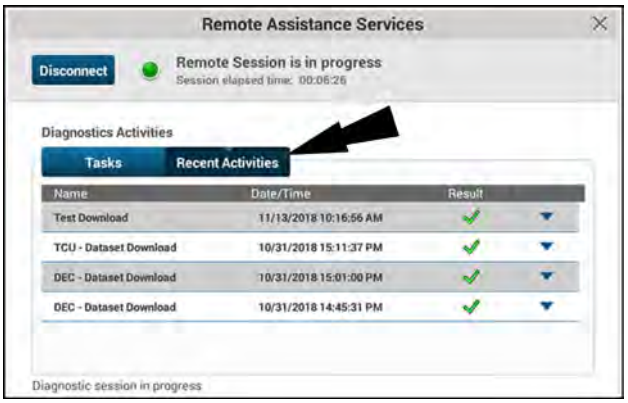
Press the “Cancel” button **(2)** to close the window and continue the remote session.

The **AFS Connect™** application shows you the operations your dealer is performing remotely.

With the “Diagnostics Activities” button set to the “Tasks” position, the actions during the current session appear.

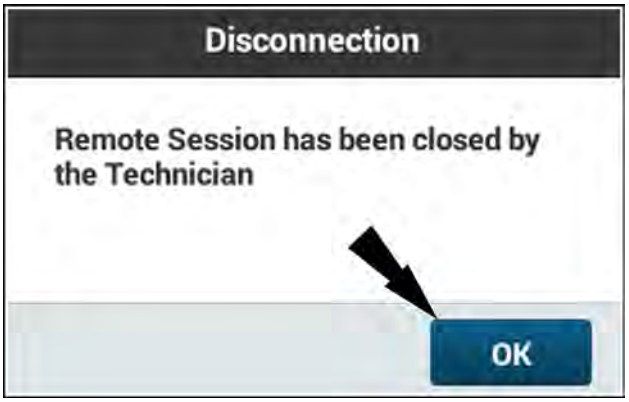
RAIL20PLM1105AA 11

With the “Diagnostics Activities” button set to the “Recent Activities” position, recent actions taken by your dealer during remote session appear in a log.



RAIL20PLM1106AA 12

If your dealer disconnects the remote session, the “Disconnection” window appears.



RAIL18PLM1837AA 13

OK

Press the “OK” button to close the “Disconnection” window.

The remote session is no longer active.

Remote display viewing

NOTE: *AFS Connect Display Viewing functions may not be available in all markets due to connectivity restrictions.*

A fleet manager or CASE IH dealer can remotely view your display while you are operating in the field.

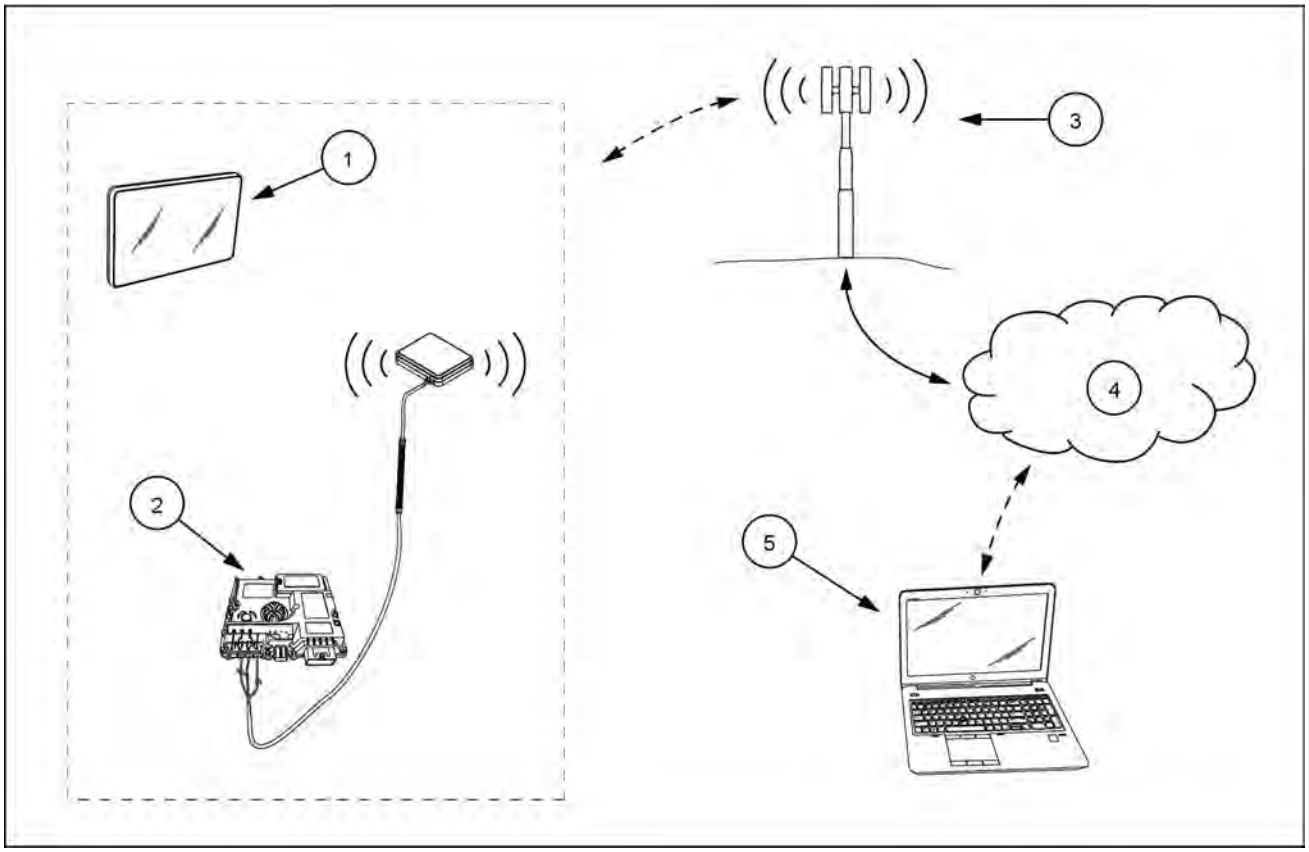
The reasons for remote display viewing include but are not limited to:

- The vehicle operator needs some supervision to understand if the machine is operating properly.
- A fleet manager wishes to monitor the progress of the machines in the field.
- A dealer wishes to modify some parameters on the vehicles for the fleet manager.
- A dealer needs to diagnose an issue on a vehicle in real time.

The AFS Connect Display Viewing feature provides this capability by allowing a remote computer logged into the AFS Connect portal to establish a connection to the display. This process uses the vehicle cellular connection with the Processing and Connectivity Module (PCM).

Vehicle owners can access this functionality through the AFS Connect Farm application, while dealers can utilize the feature through the AFS Connect Fleet application to support growers who have granted the dealer access to their account.

NOTE: *On vehicles with two displays, the secondary display is not remotely sharable.*



RAPH22PLM0047AA 1

Item	Description
(1)	Display
(2)	Processing and Connectivity Module (PCM)
(3)	Cellular network
(4)	Web portal
(5)	User web browser

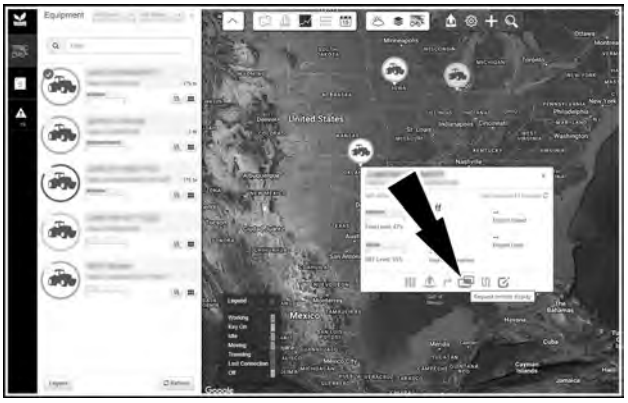
Initiating a session on the Farm app

In the **AFS Connect™** Farm application, click to select one of your vehicles.

In the popup window that appears, click the Remote Display View (RDV) icon.

NOTE: *If you do not have the* ***TeamViewer®*** *application installed on your computer, you will see a link that prompts you to download and install the application.*

NOTE: *Using the remote display viewing feature does not require a paid subscription or license for the TeamViewer® client.*



RAPH22PLM1554PA 2

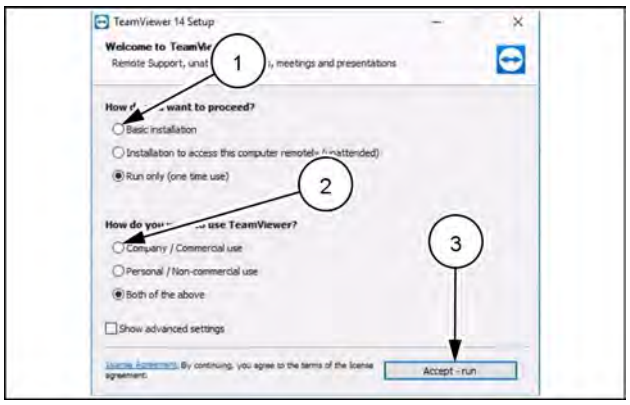
If you had to download the TeamViewer® client, click the downloaded file to start the installation.

NHIL19PLM0716AA 3

The installation wizard appears.

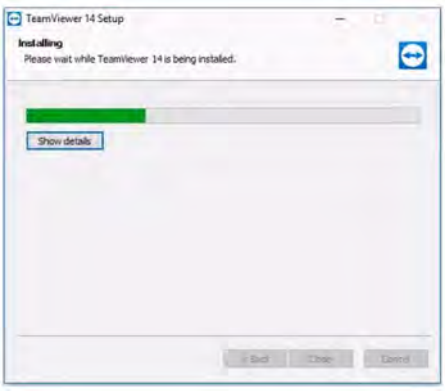
Select the “Basic installation” option **(1)**, and the “Company / Commercial use” option **(2)**.

Press the “Accept - run” button **(3)**.



NHIL19PLM0717BA 4

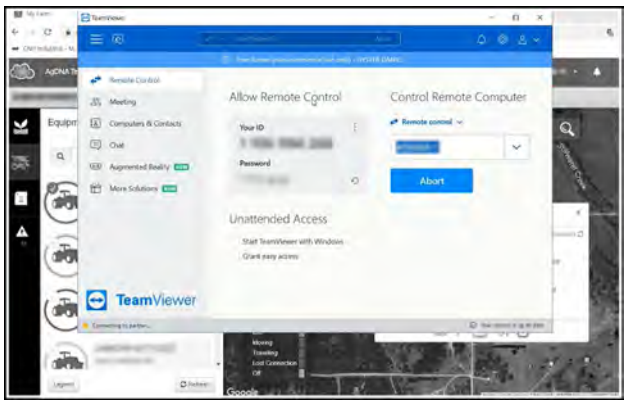
The wizard will automatically install the TeamViewer® client. When the installation is complete, the wizard disappears.



NHIL19PLM0718AA 5

With the **TeamViewer®** client installed, the **TeamViewer®** application opens.

If the operator accepts the request for a remote display viewing session, the TeamViewer® client opens and connects to the vehicle display.



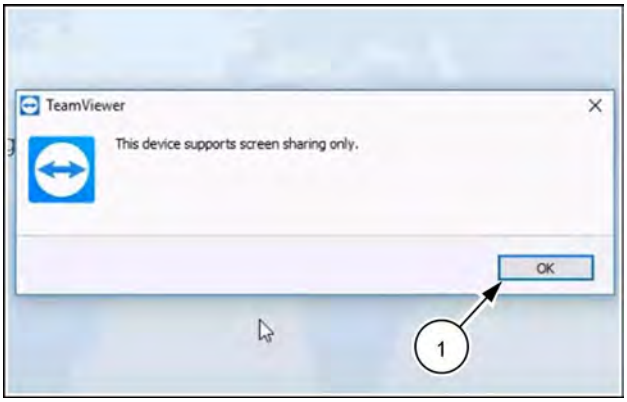
RAPH22PLM1555PA 6

As the connection initializes, a reminder pop-up window displays.

“This device supports screen sharing only.”

As a safety precaution, the remote display viewing session is read only from the web portal user to avoid unintentional movement or operation of the vehicle.

Press the “OK” button **(1)** to continue.



NHIL19PLM0722AA 7

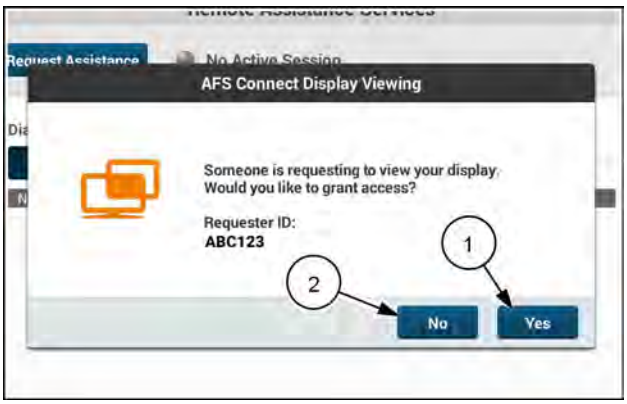
Initiating a session on the display

NOTE: *AFS Connect Display Viewing display view sessions can be initiated only by the web portal user. The vehicle operator cannot initiate a remote display viewing session.*

When the web portal user initiates an AFS Connect Display Viewing session, an “ AFS Connect Display Viewing” window appears in the display.

Press the “Yes” button **(1)** to grant permission to the web portal user.

Press the “No” button **(2)** to refuse permission to the web portal user.



NHIL20PLM0745AA 8

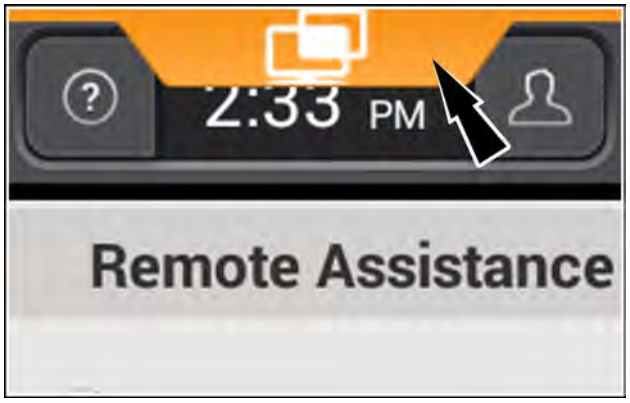
An orange frame appears around the outer edge of the display. This orange frame indicates the display is being remotely viewed.

Session disconnect by operator

The operator can disconnect the remote viewing session at any time.

To disconnect the live session, press the tab at the top of the orange frame.

A confirmation window appears.



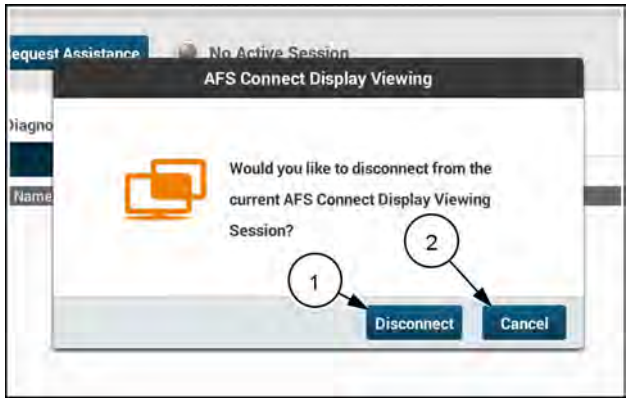
NHIL20PLM0760AA 9

Disconnect

Press the “Disconnect” button **(1)** to disconnect the session.

Cancel

Press the “Cancel” button **(2)** to continue the remote viewing session and close the window.



NHIL20PLM0748AA 10

Session ended by web portal user

The web portal user can end the remote viewing session by closing the TeamViewer® client window.

If the web portal user ends the remote viewing session, a message temporarily appears. The orange frame disappears.

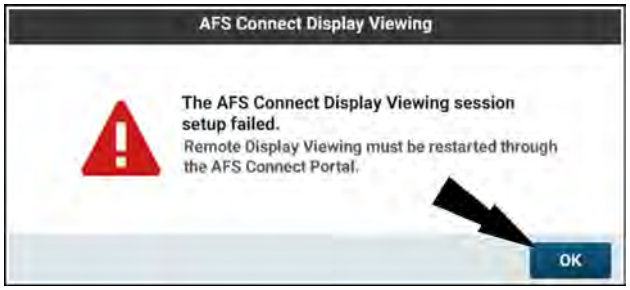
NHIL20PLM0757AA 11

Error messages

Cellular connectivity problems or internet connection problems can cause failures in establish remote viewing sessions. These problems can also cause a session to stop.

If a problem prevents a remote viewing session from starting, the following message appears:

“The AFS Connect Display Viewing session setup failed. Remote display viewing must be restarted through the web portal.”



NHIL20PLM0751AA 12

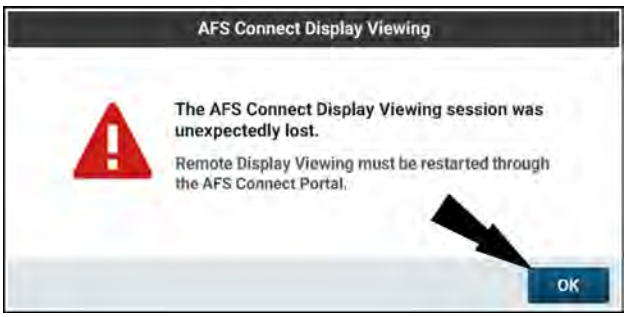
OK

Press the “OK” button to close the window.

If the remote display viewing session fails during the session, the following message appears:

“The AFS Connect Display Viewing session was unexpectedly lost. Remote display viewing must be restarted through the web portal.”

Press the “OK” button to close the window.

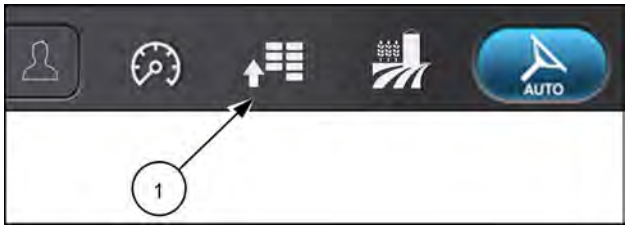


NHIL20PLM0756AA 13

7 - DATA MANAGEMENT

"Data" card

Press the “Menu” button **(1)** on the top bar to open the “Menu” screen. Press the “Settings” tab, if necessary.



RAIL19PLM0121AA 1

Press the appropriate button to access the “Data” card.

NOTE: *The “Data” screens are disabled for all basic users. You must be an administrative user to open the “Data” screens.*

NHIL20PLM0744AA 2

The “Data” card allows you to manage, import, and export the information on your display.

The “Data Management” screen contains a hierarchy of information related to:

- Grower / farm / field / task data
- Crop and product data

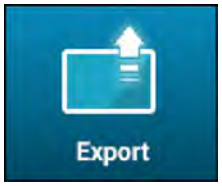
The “Inbox” screen:

- contains the individual zip files present on your AFS Connect portal account.
- contains a history of interactions with the zip files.
- allows you to import data from the cloud to the display.

NOTE: *The "Inbox" screen tab will appear grayed out with a padlock symbol if your display does not have an active AFS Connect™ telematics subscription.*

The “Import” screen allows you to import data from a USB memory stick or the cloud, such as:

- Grower, farm, field, and task configurations
- Precision farming databases
- Guidance lines and configurations
- Prescriptions
- Guidance lines from **Trimble®** and **John Deere™** displays



The “Export” screen allows you to export data to a USB memory stick or the cloud, such as:

- Grower, farm, field, and task configurations
- Precision farming databases
- Guidance lines and configurations
- Prescriptions

The “Product Library” screen allows you to configure your product library, where you can:

- View your list of products
- Search for a product
- Add, edit, or copy a product

Introduction: File Transfer

NOTE: *Connectivity functions such as file transfer to the AFS Connect™ portal may not be available in all markets.*

Growers and operators that use the AFS Connect™ portal can exchange data with their vehicle in shorter time intervals as well as by manual command, allowing for quicker access to their data to monitor and control their fleet.

Data can be exchanged between devices and your farm management software using the following methods:

- The cloud: Use the AFS Connect™ Farm App to send farming data from the cloud to your **Pro 1200** display.
- Universal Serial Bus (USB) stick: Use a USB stick to transfer farming data between displays. A USB stick can also be used to import or export data from the **Pro 1200** display.

With telematics and file transfer, ISOXML files can be sent from the Farm App to the displays by using the on-board modem. The **Pro 1200** display can only accept data in ISOXML or Shapefile format from either the cloud or a USB stick.

Data management: Best practices

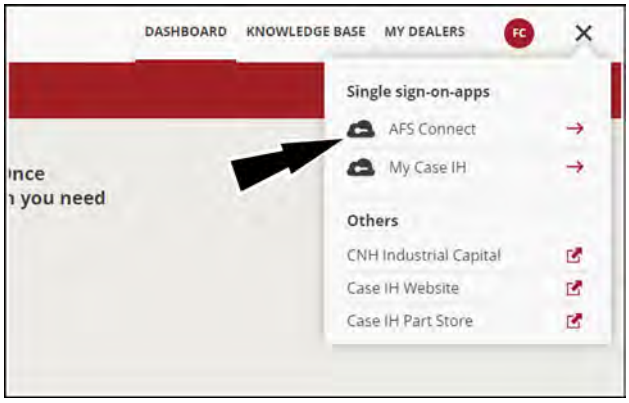
Always use the CASE IH approved USB memory stick, part number 47962967 (4 GB) or 90484784 (64 GB), when operating with the **Pro 1200** display.

Perform the procedures below before you begin operating with the **Pro 1200** display.

To begin, log in to your Case IH account.

https://my.caseih.com/

To access **AFS Connect™** from your Case IH account, click the ”AFS Connect” link from the toolbox menu. If you have not accessed **AFS Connect™** before, you must accept the user agreement before proceeding.



NHIL19PLM0078AA 1

Click the “Farm” tab from the drop-down menu to access the Farm App.

If you have not accessed the Farm App before, you must accept the user agreement before proceeding.

Use the Farm App to initiate the file transfer.

1. Save the contents of the USB memory device you use in your display to a known folder on a computer.
2. From the Farm App dashboard, Press the “add” button **(1)** to manually upload the data to the Farm App. Follow the workflow to select your data type and file set.
3. Press the “upload” button **(2)** to send the data from the Farm App to the selected vehicle. Follow the workflow to select the data type, file set, destination (“Send to Equipment”), and vehicle name. The data will be received by the displays when powered up. See ‘”Inbox” screen’ (**7-13**).
4. Erase the contents of the USB memory device, but do not re-format it.

AFS Connect™ Farm App

NHIL20PLM0361AA 2

5. Use the Farm App to manage setup data needed for the new season.

This setup data includes but is not limited:

- Grower/farm/field selections
- Field boundaries
- Guidance lines
- Products

NOTE: *If the field does not have a boundary recorded, then no data recorded from the* ***Pro 1200*** *display will be visualized for that field in the Farm App.*

If your setup data was created on the vehicle and sent to the Farm App via file transfer, it may not be available to visualize associated as-applied data yet.

To manually process this setup data:

A. Click the “setup” button **(3)**.

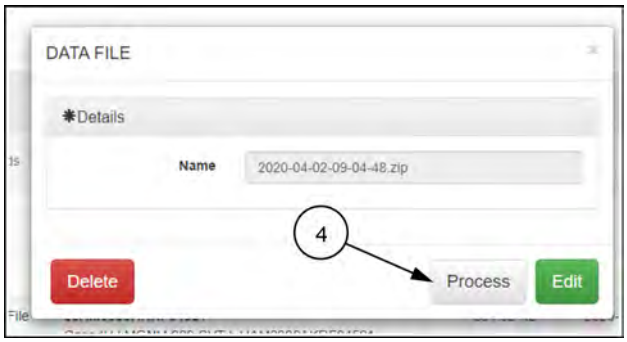
B. Navigate to the “Files > Data Files” screen and click on your data set that contains your setup data.

C. Press the “Process” button **(4)** and follow the workflow to process your setup data on your account.

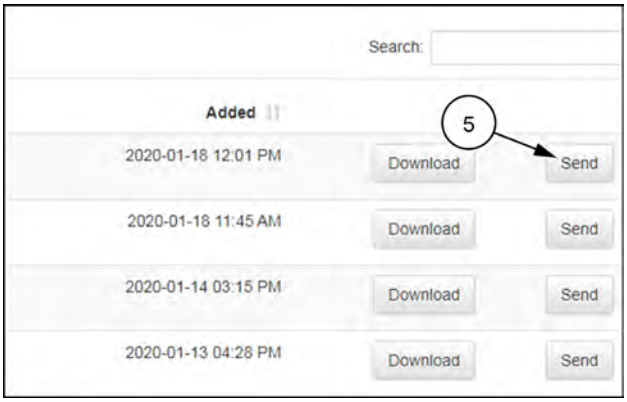
Upload prescriptions to the Farm App manually. Click the “setup” button **(3)**, and locate the prescription on the “Files > Data Files” screen. Press the “Send” button **(5)** to push the prescription to the vehicle.

6. Use the Farm App to send the new seasonal data to the vehicle.
7. With the vehicle key in the OFF position, insert the USB memory device into the **Pro 1200** display.
8. Turn the vehicle key to the ON position. The data will populate automatically in the inbox of the **Pro 1200** display. See “Inbox screen” (**7-13**).
9. Verify all of your data is present in the display.

NHIL20PLM0361AA 3



NHIL20PLM0381AA 4



RAPH22PLM1745AA 5

Managing data

NOTE: *The “Data” screens are disabled for all basic users. You must be an administrative user to open the “Data” screens.*

Good data management in agricultural displays provides benefits, including:

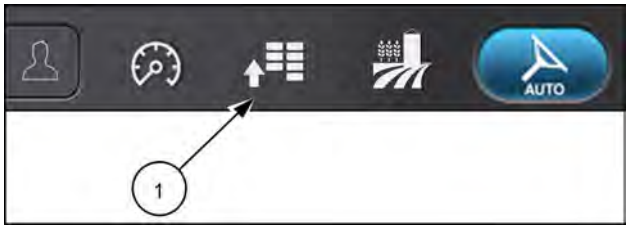
- Efficient use of system memory, which can result in faster display operation
- Effective organization of data, for ease of use
- Elimination of the need to record redundant data more than once

The “Data Management” screens provide the following operations on data in the display:

- Edit
- Copy

  NOTE: *Swaths are the only data type that you can copy. You can copy swaths from one field to another in the “Data Management” screens. However you cannot use the “Data Management” screens to copy a swath within the same field. To copy a swath within the same field, use a map User Defined Window (UDW).*
- Delete

To access the “Data” screens, press the “Menu” button **(1)** on the top bar to open the “Menu” screen. Press the “Settings” tab, if necessary.



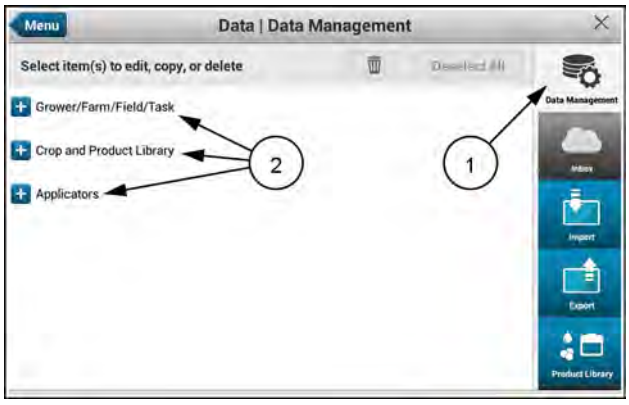
RAIL19PLM0121AA 1

Press the appropriate button to access the “Data” card.

NHIL20PLM0744AA 2

Press the “Data Management” tab **(1)**.

Any category **(2)** that contains data appears in the “Data Management” tab. If a category does not contain data, “No Grower” is listed under the “Grower/Farm/Field/Task” section.



RAPH23PLM0356AA 3

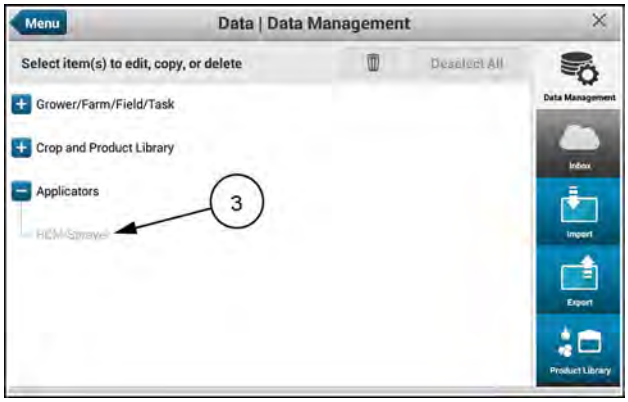
Select data

Press the “Plus” button **(1)** to expand a list. Press the “Minus” button **(2)** to collapse a list.

If necessary, scroll up or down to find the desired data.

If an item such as an ISOBUS applicator is inactive **(3)**, you cannot change it.

RAPH23PLM0358AA 4



RAPH23PLM0357AA 5

Press an item to select it. Selected items appear highlighted.

Press a selected item or items to deselect them.

RAPH23PLM0358AA 6

If needed, select additional items.

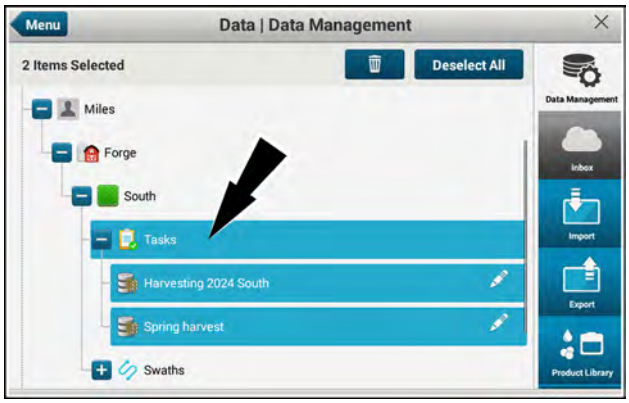
You can press a selected item to deselect it.

RAPH23PLM0359AA 7

To select all of the items within a folder in the data hierarchy, select the folder.

You can deselect all of the selected items and folders within a selected folder by pressing the selected folder.

RAPH23PLM0360AA 8



NHPH24PLM0179AA 9

At any time you can deselect all selected data and folders.

NOTE: *The "Deselect All" button* ***(1)*** *is only active if items are selected on the display.*

Deselect All Press the "Deselect All" button **(1)** to deselect all selected items.

RAPH23PLM0360AA 10

Edit

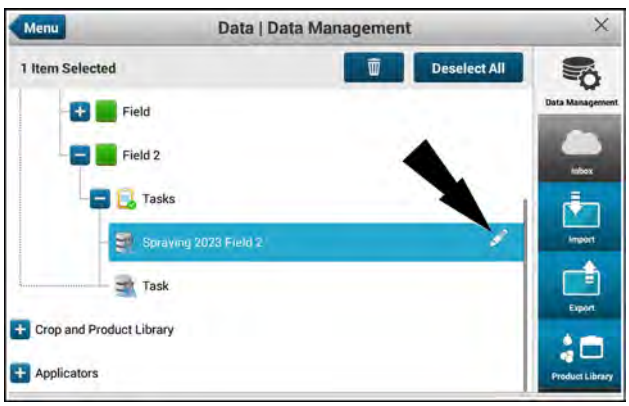
The editing function allows you to rename your data objects and folders.

NOTE: *You cannot edit data in the "Data Management" tab while your implement is in a work state or the autoguidance is engaged.*

NOTE: *Editing is only possible with individual data items. You cannot edit more than one item at a time.*

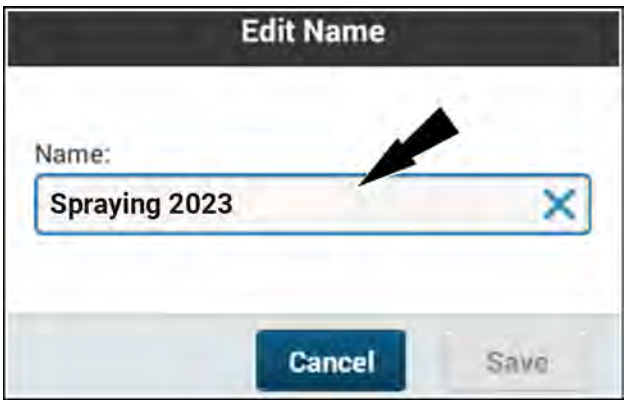
Select the item you wish to edit.

Press the "Edit" icon. The "Edit Name" window appears.



RAPH23PLM0358AA 11

Press the “Name” field. A keypad appears.



RAPH23PLM0361AA 12

Use the keypad to enter the desired name.

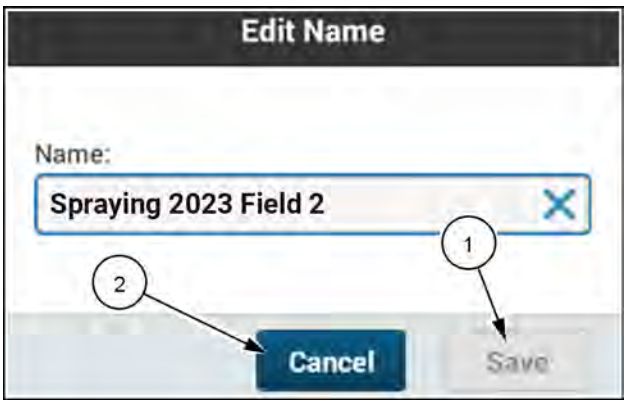
NOTE: *You can press and hold inside of a text box to place a cursor in a desired location in the text.*

Press the “Done” button to finish editing and close the keypad. The “Edit Name” window reappears with the “Save” button enabled.

RAPH23PLM0362AA 13

Press the activated “Save” button **(1)** to save the new name and close the “Edit Name” window.

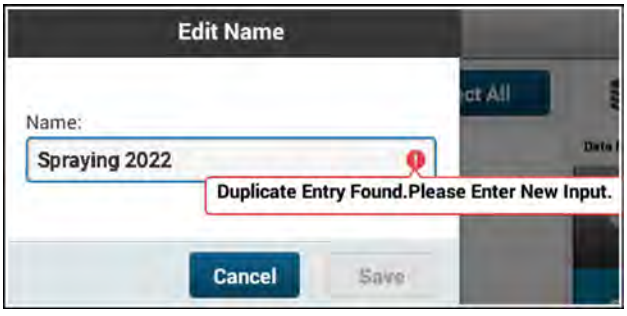
Press the “Cancel” button to discard your edits and close the “Edit Name” window.



RAPH23PLM0361AA 14

If you attempt to use a name that is already in use, an advisory message appears. The message states, “Duplicate Entry Found. Please Enter New Input.”

Use the keyboard to enter a new unique name.



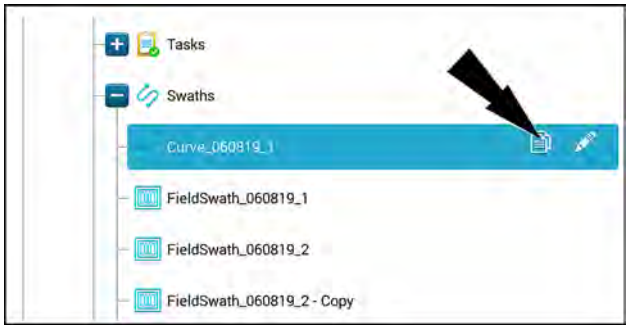
RAPH23PLM0363AA 15

Copy

NOTE: *You cannot copy data in the "Data Management" tab while your implement is in a work state or the autoguidance is engaged.*

NOTE: *The software does not allow you to copy data into folders that are not correct for the data type. For example: you cannot copy a swath into a product folder or directly under a grower folder.*

NOTE: *Swaths are the only data type that you can copy. If you select other data types, no copy icon appears.*



RAIL19PLM0190AA 16

Navigate to the data file that you wish to copy.

Press the "Copy" icon.

Press the "Radio" button **(1)** of the destination location.

Press the "Next" button **(2)** to proceed to the next step.

Press the "Cancel" button **(3)** to cancel the copy operation.

RAIL19PLM0665BA 17

A confirmation message appears.

Done

Press the “Done” button to finish the copy operation.

If you attempt to copy a file to a destination that already has a file by the same name, a (2) or higher number appears at the end of the file name. In this example “Curve_060819_1” would appear as “Curve_060819_1 (2)” if a file named “Curve_060819_1” is already present in the selected folder.

RAIL19PLM0666BA 18

Delete single object

You can remove data that you no longer need. This recovers memory space, and makes your data easier to manage.

You can delete individual data objects, multiple data objects, and folders.

When you delete a folder, you also delete all folders and data within the deleted folder.

The software prevents you from deleting objects that must remain in the data directory structure.

To delete a single data object, select the object **(1)**. The “Delete” button **(2)** activates.

RAPH23PLM0358AA 19

Press the “Delete” button.

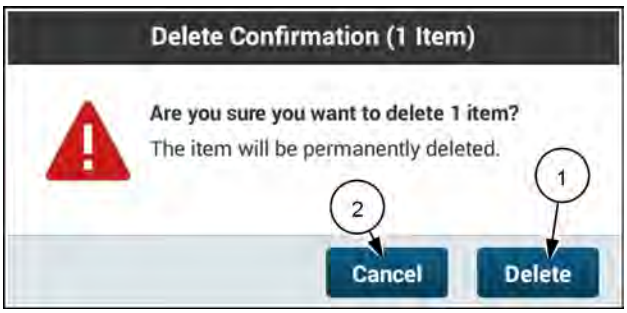
The “Delete Confirmation” window appears. Even if you select only one object for deletion, the selected object can contain multiple items.

Delete

Press the “OK” button **(1)** to confirm the deletion and close the window.

Cancel

Press the “Cancel” button **(2)** to cancel the deletion and close the window.



RAIL20PLM1114AA 20

The data directory remains with the expanded and collapsed folders the same as before you deleted the data. The deleted data no longer appears in the data directory.

Delete multiple folders and data

If you select a folder for deletion, you will also delete all of the subfolders and files beneath it in the directory structure.

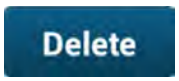
Select the data and folders you wish to delete **(3)**. Selected folders are highlighted in blue.

NOTE: *Press the "Deselect All" button* ***(2)*** *to deselect all selected data and folders.*

Press the "Delete" button **(1)**.

RAPH23PLM0360AA 21

The "Delete Confirmation" window appears.



Press the "Delete" button **(1)** to confirm the deletion and close the window.

Press the "Cancel" button **(2)** to cancel the deletion and close the window.

RAIL19PLM1564BA 22

The data directory remains with the expanded and collapsed folders the same as before you deleted the data. However, the deleted data and folders no longer appear in the data directory.

Deletion restrictions

You cannot delete some file or folder types. If you select multiple items for deletion, the display will delete only the allowed objects.

If you attempt to delete files that you cannot delete, an advisory window appears, giving the files that you cannot delete, and their location in the directory structure.

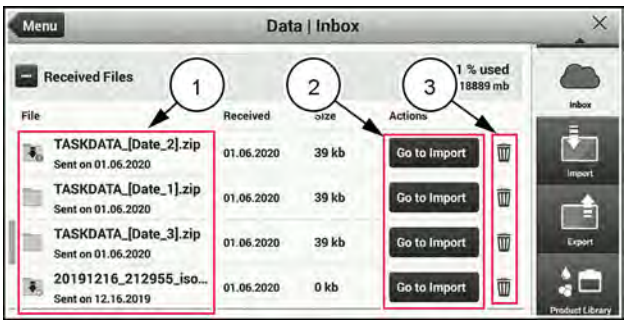
You cannot delete:

- an active run screen layout
- an active vehicle configuration
- any item while guidance is engaged
- any item during task logging

"Inbox" screen

The “Inbox” screen shows all of the associated task data files **(1)** that are sent to your display from your **AFS Connect™** portal account.

NOTE: *Voyager 2 (*.CN1) folders can appear in the Inbox tab as downloaded data. However, *.CN1 folders are not supported by the Precision Farming software in this display.*



RAPH23PLM0364AA 1

Press the “Go to Import” button **(2)** to import the file set from your **AFS Connect™** portal account into the display.

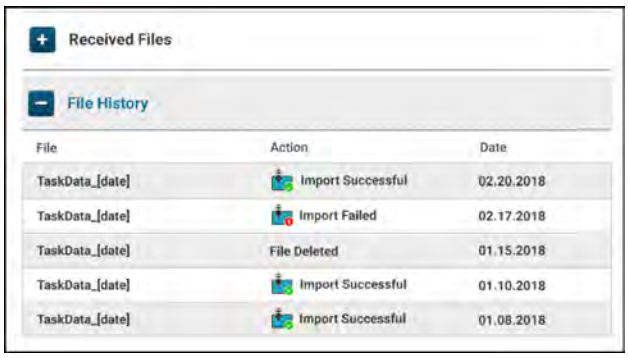
The “Import” button directs you to the “Import” screen, as described in “Importing data” (**7-14**) that follows this section.

NOTE: *The **Pro 1200** display only supports files in the ISOXML format. If you select the wrong file type for import, the “Go to Import” button is disabled.*

Press the “delete” button **(3)** to delete the file set.

File History

The “File History” section is a read-only log of actions on your files. The log defaults to the time sequence of the actions, with the most recent action first.

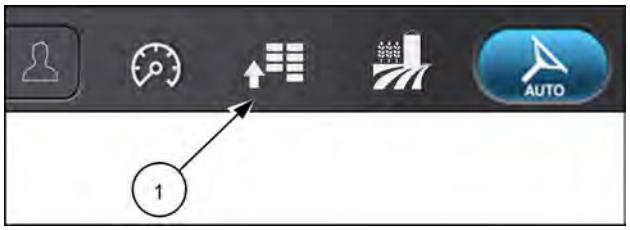


RAIL20PLM1110AA 2

Importing data

NOTE: *Avoid importing data that contains a TASKDATA.xml file that is over 300 Mb. Larger TASKDATA files are typically created within third party Farm Management Information Systems (FMIS) due to the number of data points used to form the field boundaries and MultiSwaths. CASE IH recommends using the vehicle with the GNSS receiver to record a field boundary or MultiSwath, or drawing the field boundary in the AFS Connect Farm application.*

Press the “Menu” button **(1)** on the top bar to open the “Menu” screen. Press the “Settings” tab, if necessary.



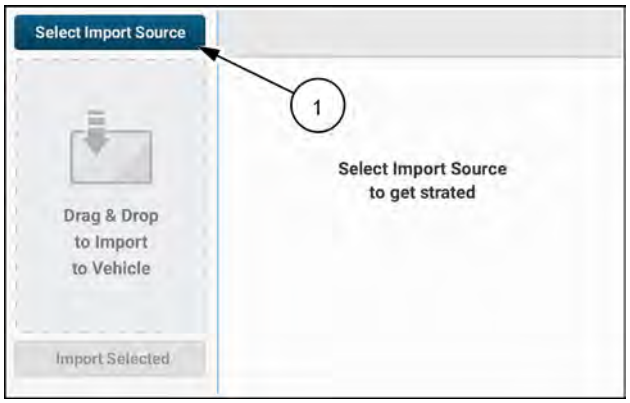
RAIL19PLM0121AA 1

Press the appropriate button to access the “Data” card.

NHIL20PLM0744AA 2

Press the “Import” button.

Press the “Select Import Source” button **(1)**. The “Select Import Source” window appears.



NHIL19PLM0183AA 3

Select the desired option for your import. You can choose to import data items from either a USB drive **(2)** or from your cloud inbox **(3)**.

NOTE: *If there is no detected USB drive, or if your cloud connection is not active, the applicable option appears grayed out.*

Press the “plus” button **(1)** to view the file structure of the data you wish to import.

RAIL20PLM1501BA 4

If your USB drive contains guidance lines from a **Trimble®** or **John Deere™** display, then the display will automatically detect the folders that contain the guidance line information and display them for your selection.

NOTE: *For data exported from a **Trimble®** display, the software will automatically assign a generic name for each guidance line. For data exported from a **John Deere™** display, the software will inherit the name of the guidance line from the **John Deere™** display.*

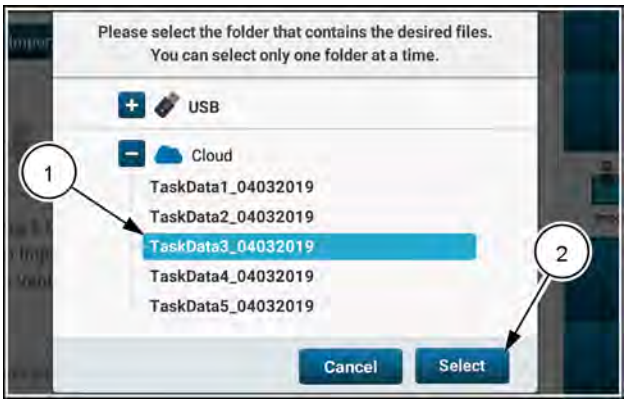
NOTE: ***Trimble®*** *data should be located in a folder named “AgGPS” on the root directory of the USB drive and should contain “ SWATHS.SHP” “ SWATHS.SHX” “ SWATHS.PFJ” and “ SWATHS.DBF” files.*

NOTE: ***John Deere™*** *data can be located in any folder on the root directory of the USB drive that contains a “ .SPACIALCATALOG ” file.*

Select the data **(1)** that you wish to import. Once at least one item is selected, the “Select” button becomes active.

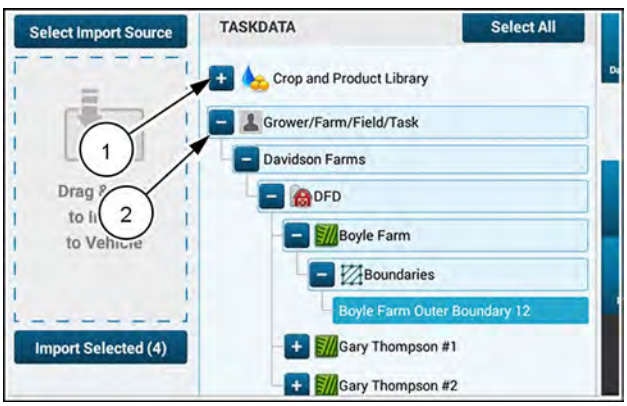
Press the “Select” button to continue the import. The applicable data directory appears.

Press the “Cancel” button if you wish to cancel the import and return to the “Import” screen.



RAIL19PLM1175AA 5

Press the expand **(1)** and collapse **(2)** buttons to view the list of data items.



NHIL19PLM0185AA 6

Press to select all of the desired data items or folders **(1)**. You can press an inadvertently selected data item to de-select it. All folders in the hierarchy above the selected item appear lightly highlighted.

NOTE: *You may need to scroll down to see all of the available data items.*

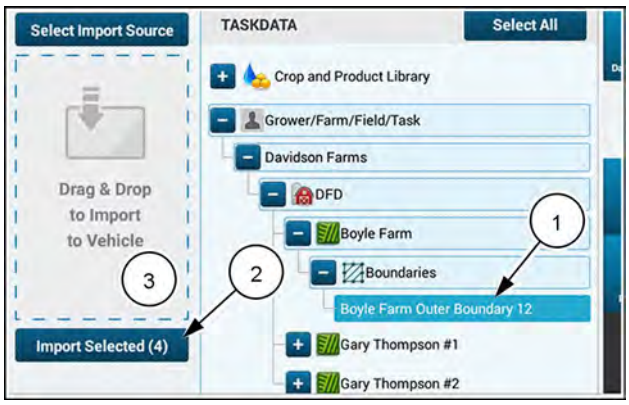
NOTE: *If you attempt to import an empty folder, an error message window opens.*

Press the “Import Selected” button **(2)**. The import starts.

You can also drag-and-drop a data item to the “Drag and Drop” area **(3)** of the screen. As the data items are dropped, the import process is automatically initiated.

The software automatically searches for the appropriate locations for the imported data.

Press the “Cancel” button if you need to cancel the import.



NHIL19PLM0185AA 7

RAPH23PLM0396AA 8

If you wish to cancel the import, press the “Yes” button **(1)** to cancel the import and return to the “Data/Import” window.

Press the “No” button **(2)** to close the “Cancel” window and continue with the import.

RAIL18PLM1691AA 9

After the import is complete, the landing screen of the “Import” tab appears.

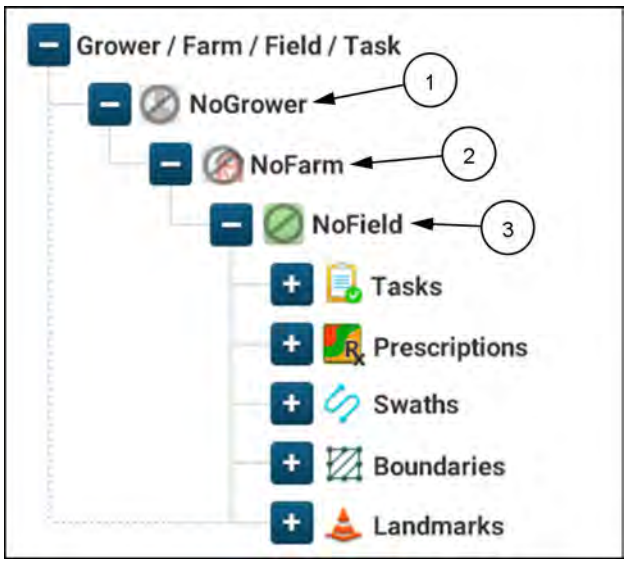
NOTE: *After the import is complete, a message window stating “Import Complete” appears briefly.*

RAIL20PLM1026AA 10

Grower-Farm-Field (GFF) location absent

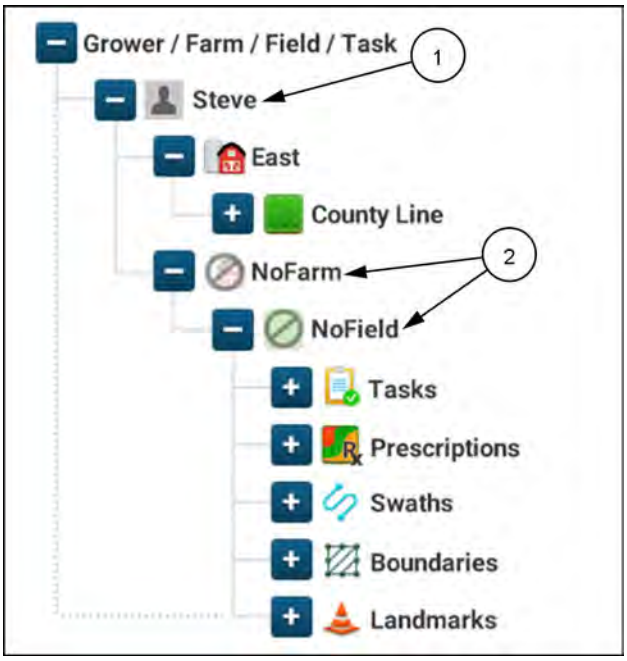
In most instances, the Grower-Farm-Field (GFF) location is attached to imported data that resides in the GFF section of the data tree. This data automatically goes into a matching GFF location in the display. If there is no matching GFF location in the display, the software creates one and then places the data into it.

However, not all data formats require the GFF location to be attached. Data without a GFF location attached goes into folders named, “NoGrower,” **(1)** “NoFarm,” **(2)** and “NoField. **(3)** ”



RAIL19PLM1565BA 11

If the GFF location is partially present, the folder structure includes that part of the GFF location. In this example the imported data includes a grower **(1)**, but no farm or field **(2)**. The software created folders named “NoFarm” and “NoField”, and populated them with the imported data.



RAIL19PLM1566BA 12

Data conflict

If a file being imported has the same file name as one already in the display, a data conflict results.

NHIL20PLM1841AA 13

Depending upon the type of file that results in a conflict, up to five options for resolving the conflict are available:

- “Cancel” – Cancel the import of the current file and the entire import. A window appears asking you to confirm the cancellation.
- “Merge” – This is available for an imported grower, farm, and field. Combine the contents of the conflicting grower, farm, or field.
- “Skip” – Cancel the import of the current file and proceed to the next file to be imported, if applicable.
- “Replace” – Replace the file currently in the display with the newly imported file.

  NOTE: *Some objects that are actively selected in the display, such as grower-farm-field-task, vehicle configurations, and user profiles, cannot be replaced.*
- “Keep Both” – Keep both the file currently in the display and the newly imported file. The software renames the newly imported file.

Import failed

If the import fails, an advisory message appears. The advisory message gives an error code and a brief explanation of the reason for the import failure.

RAIL19PLM1162AA 14

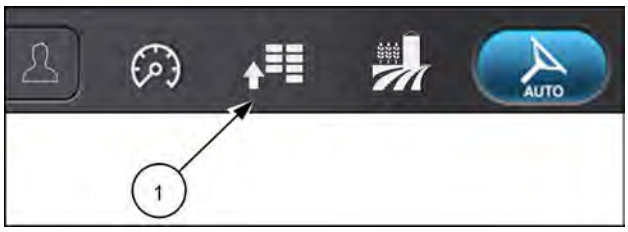
Press the “OK” button to acknowledge the error. If the error continues, investigate the cause of the communication failure.

Exporting data

Exporting data requires that you choose both the exported data and the destination.

NOTE: *Exporting data requires that a Universal Serial Bus (USB) data card is inserted in the display.*

Press the “Menu” button **(1)** on the top bar to open the “Menu” screen. Press the “Settings” tab, if necessary.



RAIL19PLM0121AA 1

Press the appropriate button to access the “Data” card.

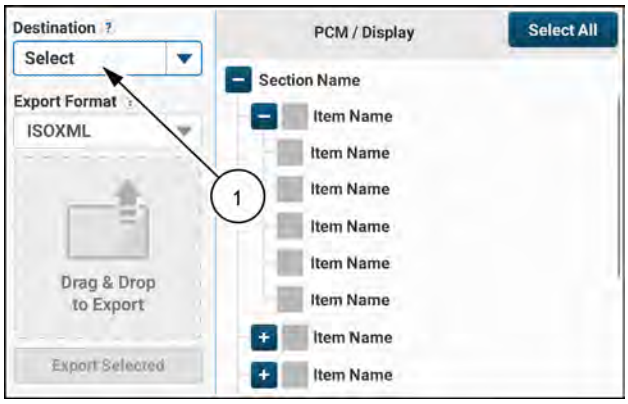
NHIL20PLM0744AA 2

Press the “Export” icon to access the “Export” screen.

Press the “Destination” drop-down menu **(1)**.

The “Destination” menu opens with the following available selections. If a destination listed below is unavailable, it does not appear:

- AFS Pro 1200
- AFS Pro 800
- AFS Pro 700
- Desktop software
- AFS Connect



NHIL19PLM0243AA 3

If there is no export destination connected or available, the “Destination” field reads, “Not Connected.”

Press the “Information” icon in the “Destination” area to see information about the available export destinations.

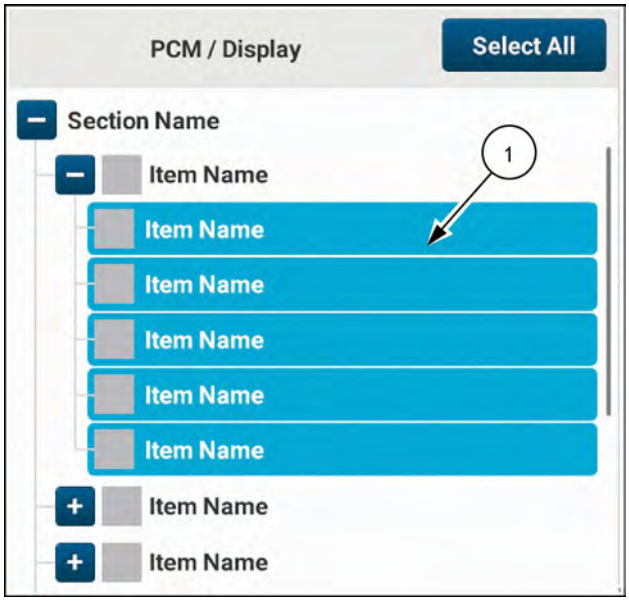
The “Supported Export Destinations” dialog appears.

RAPH23PLM0378AA 4

Press the expand and collapse buttons to view the list of data items.

Press to select all of the desired data items or folders **(1)**. You can press an inadvertently-selected data item to de-select the item. All folders in the hierarchy above the selected item appear lightly highlighted.

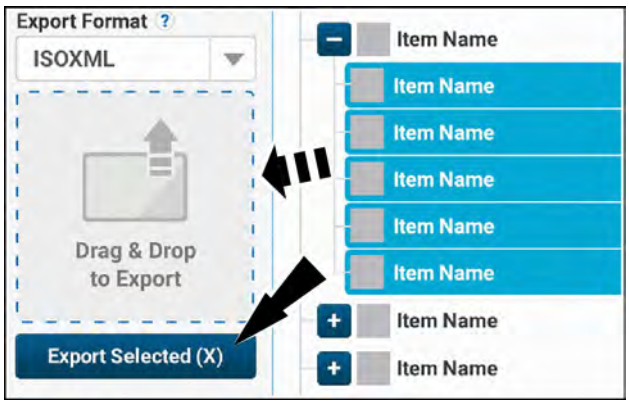
NOTE: *You may need to scroll down to see all of the available data items.*



RAPH23PLM1219BA 5

Press the “Export Selected” button. The export starts.

You can also long press on an item to drag-and-drop a data item to the “Drag and Drop” area of the screen. As the data items are dropped, the export process is automatically initiated.



RAPH23PLM0370AA 6

The display will automatically export your data in the industry-standard ISOXML format.

The status **(1)** of your data export is shown.

Press the “Cancel” button **(2)** if you need to cancel the export.

After the export is complete, the landing screen of the “Export” tab appears.

Upon successful completion of the data export, an “Export Completed” message temporarily appears on the “Export” screen.

RAPH23PLM0369AA 7

If communication is lost between the display and the export destination, an error message appears describing the detected error.

RAIL18PLM1710AA 8

OK

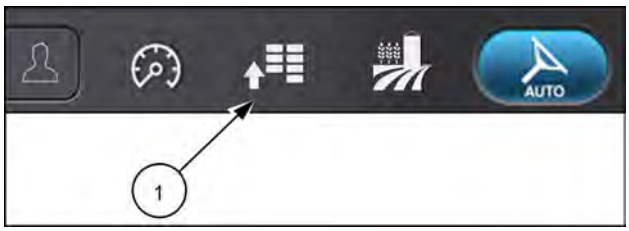
Press the “OK” button **(1)** to acknowledge the error. If the error continues, investigate the cause of the communication failure.

Suppress

Press the “Suppress” button **(2)** to acknowledge the error. You will not be notified of further instances of the error during the current power cycle.

Managing products and product mixes

Press the “Menu” button **(1)** on the top bar to open the “Menu” screen. Press the “Settings” tab, if necessary.



RAIL19PLM0121AA 1

Press the appropriate button to access the “Data” card.

NHIL20PLM0744AA 2

Press the “Product Library” icon. The “Data/Product Library” screen appears.

RAIL20PLM1027AA 3

Manage products

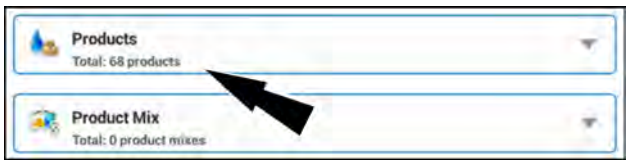
You can perform the following operations to manage existing products:

- Edit
- Copy
- Delete

NOTE: *See “Create a product” (**7-29**) for information on creating new products.*

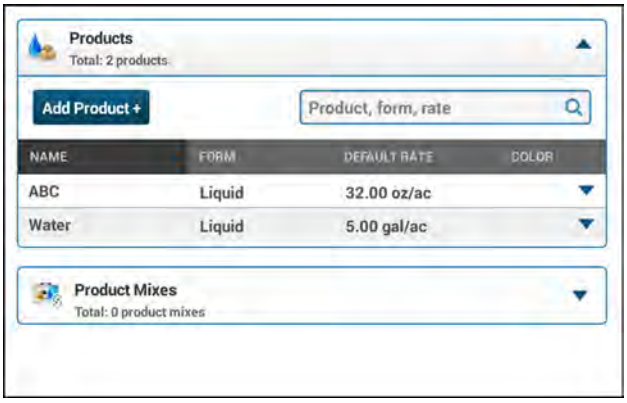
Open a product for managing

Press the “Products” drop-down menu. The “Products” list appears. listing your products.



RAIL20PLM1017AA 4

Scroll if needed to find the desired product.



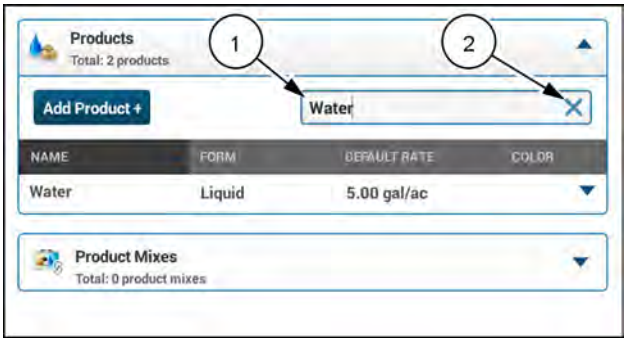
RAPH23PLM0365AA 5

Press the drop-down list of the desired product to expand the product information.

RAPH23PLM0366AA 6

You can use the search bar **(1)** to filter the product list.

Press the “X” icon **(2)** to clear the search bar.



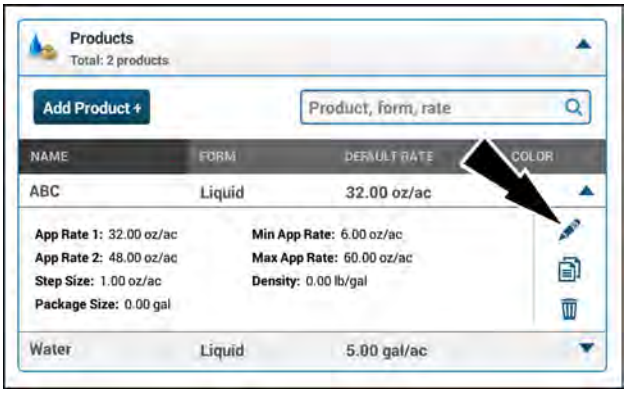
RAPH23PLM0367AA 7

Edit a product

You can edit the name and many properties of a product that already exists in your database.

Open the product you wish to edit.

Press the “Edit” icon.



RAPH23PLM0366AA 8

The “Edit Product” window appears.

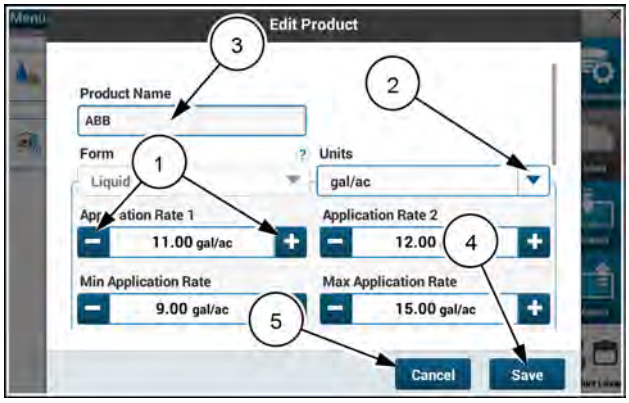
Press the “Product Name” field to edit the product name.

Scroll down as needed to view all of the product properties.

Use the plus/minus buttons **(1)** and the drop-down menus **(2)** as applicable to edit the properties of the product. Use editing fields **(3)** to edit items that require a keypad entry.

Press the “Save” button **(4)** to save your changes and close the “Edit Product” window.

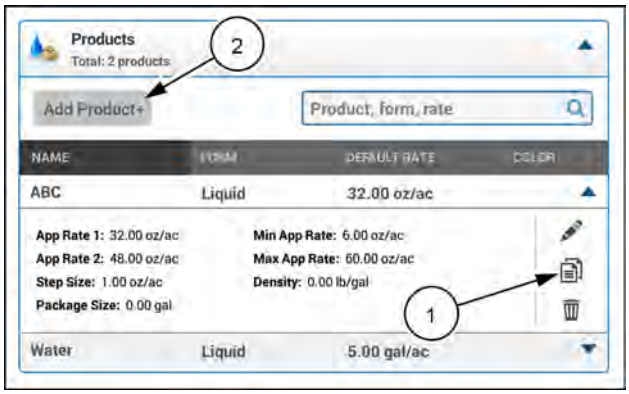
Press the “Cancel” button **(5)** to discard your changes and close the “Edit Product” window.



RAPH23PLM0371AA 9

If a product is currently in use by a controller when you select it for editing, the edit, copy, and delete icons **(1)** appear in the disabled state. The “Add Product” button **(2)** is also in the disabled state.

If you press the alert icon, it pops up a message that states, “Alert. This product is currently in use by a controller.”



RAPH23PLM0375AA 10

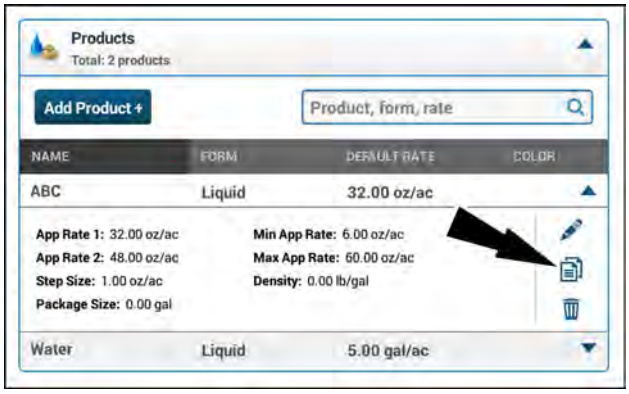
Copy a product

Copying a product is similar to editing a product. However copying a product makes a new product and prefills the product properties with the product you are copying. You can create a new name and new properties of the new product.

The product copy feature makes it easy to make a new product with properties that are similar to one of your existing products.

Open the product you wish to copy.

Press the “Copy” icon.



RAPH23PLM0366AA 11

The “Copy Product” window appears.

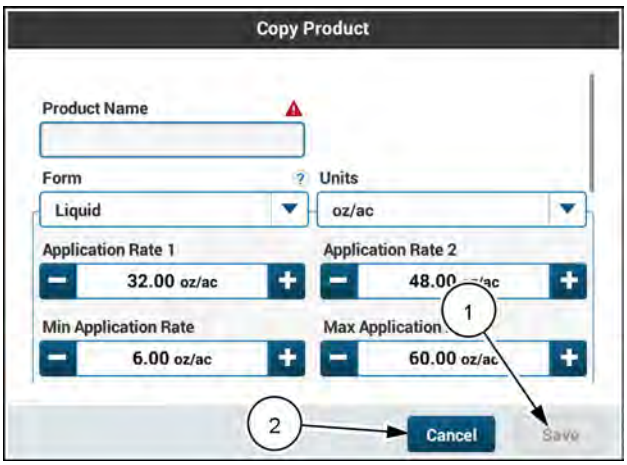
Press the “Product Name” field to edit the product name.

NOTE: *If you do not give your product a unique name, the software will name the copied product for you. The default is <product name> (2), or next available number.*

Scroll down as needed to view all of the product properties.

Use the plus/minus steppers, selection buttons, and the drop-down menus as applicable to edit the properties of the product.

NOTE: *In fields with plus/minus steppers, you can also long-press the numerical field to bring up a keypad for directly entering the desired values.*



RAPH23PLM1218BA 12

Press the active “Save” button **(1)** to save your changes and close the “Copy Product” window.

Press the “Cancel” button **(2)** to discard your changes and close the “Copy Product” window.

Delete a product

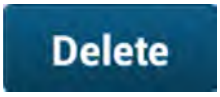
You can delete products that you no longer need. This saves memory space and makes your product library easier to read and manage.

Open the product you wish to delete.

Press the “Delete” icon.

RAPH23PLM0366AA 13

The “Delete Product” window appears.



Press the “Delete” button **(1)** to confirm the deletion and close the “Delete Product” window.

Press the “Cancel” button **(2)** to cancel the deletion and close the “Delete Product” window.

RAIL18PLM1306BA 14

Manage product mixes

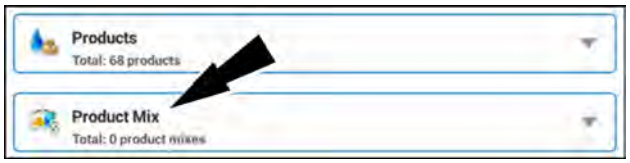
NOTE: *The product mixes and application rates shown in the images below are for example only and are not recommendations by CASE IH.*

You can perform the following operations to manage existing product mixes:

- Edit
- Copy
- Delete

Open a product mix for managing

Press the “Product Mix” drop-down menu. The “Product Mix” list appears. listing your product mixes.



RAIL20PLM1017AA 15

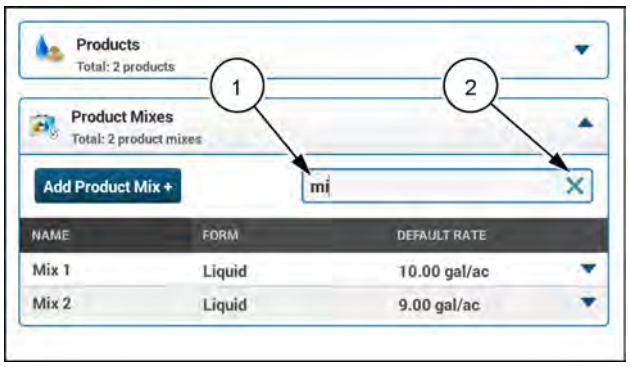
Scroll if needed to find the desired product mix.

Press the drop-down list of the desired product mix to expand the product mix information.

RAPH23PLM0372AA 16

You can use the search bar **(1)** to filter the product mix list.

Press the “X” icon **(2)** to clear the search bar.



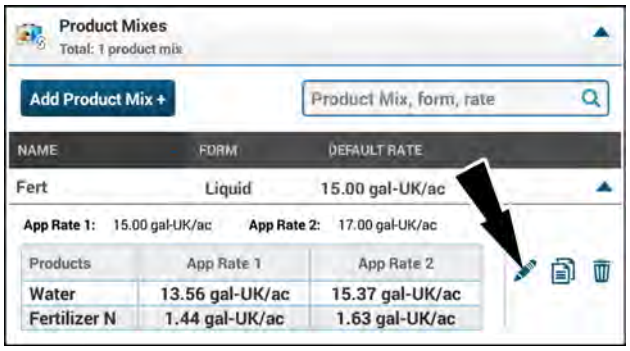
RAPH23PLM0373AA 17

Edit a product mix

You can edit the name and many properties of a product mix that already exists in your database.

Open the product mix you wish to edit.

Press the “Edit” icon.

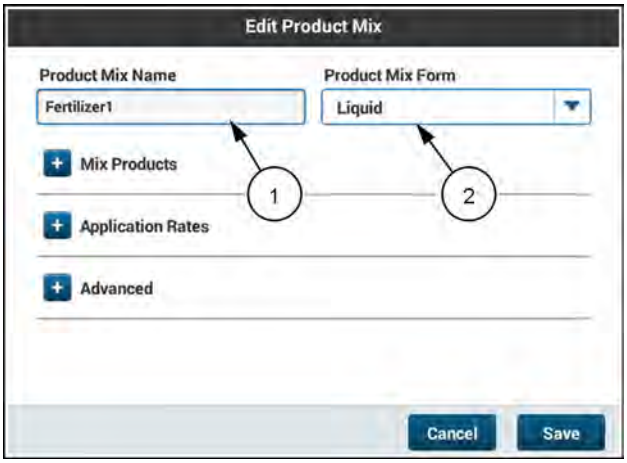


RAIL20PLM1113AA 18

The “Edit Product Mix” window appears.

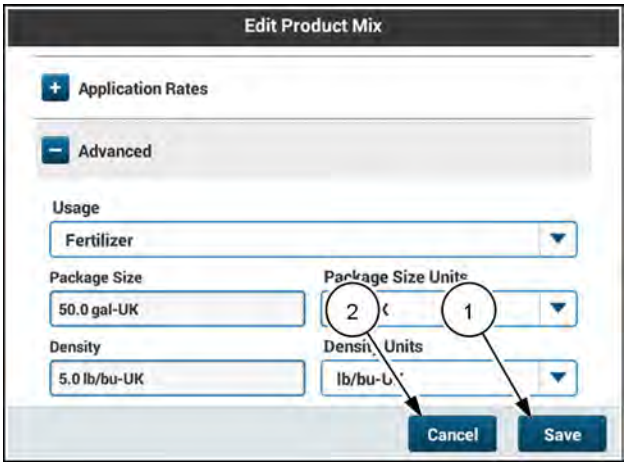
Press the “Product Mix Name” field **(1)** to edit the product mix name.

If needed, use the “Product Mix Form” drop-down menu **(2)** to choose product mix form.



RAIL18PLM1307BA 19

Expand the three groups as needed to see their properties. Enter your desired edits. See “Create a product mix” (**7-31**) for information about product mixes.



RAIL18PLM1308BA 20

Save

Press the “Save” button **(1)** to save your changes and close the “Edit Product Mix” window.

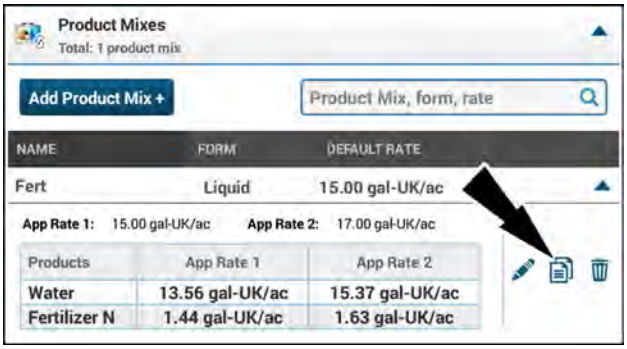
Cancel

Press the “Cancel” button **(2)** to discard your changes and close the “Edit Product Mix” window.

Copy a product mix

Copying a product mix is similar to editing a product mix. However copying a product mix makes a new product mix and prefills the product mix properties with the product mix you are copying. You can edit the name and the properties of the new product mix.

The product mix copy feature makes it easy to make a new product mix with properties that are similar to one of your existing product mixes.



RAIL20PLM1113AA 21

Open the product mix you wish to copy.

Press the “Copy” icon.

The “Copy Product Mix” window appears. The “Product Mix Name” field **(1)** contains the default name for a copied product mix.

Press the “Product Mix Name” field **(1)** to edit the product mix name.

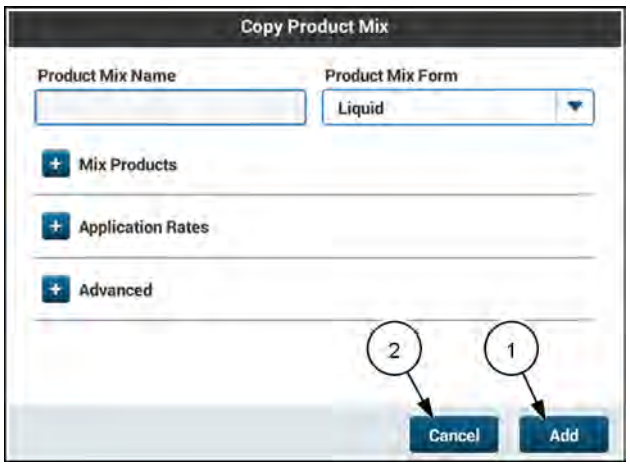
If needed, use the “Product Mix Form” drop-down menu **(2)** to choose product mix form.

RAIL20PLM1021AA 22

Expand the three groups as needed to see their properties. Enter your desired edits. See “Create a product mix” (**7-31**) for information about product mixes.

Press the “Save” button **(1)** to save your changes and close the “Copy Product Mix” window.

Press the “Cancel” button **(2)** to discard your changes and close the “Copy Product Mix” window.



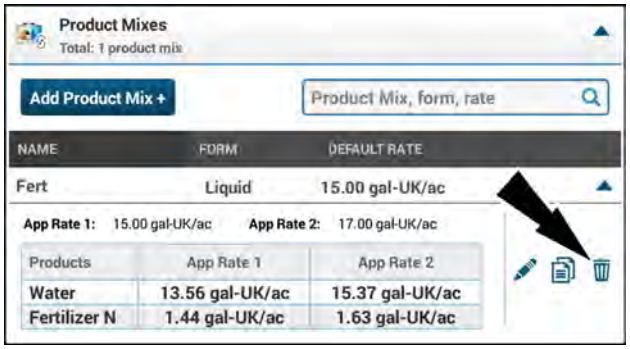
RAIL20PLM1021AA 23

Delete a product mix

You can delete product mixes you no longer need. This saves memory space and makes your product mix library easier to read and manage.

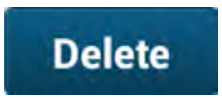
Open the product mix you wish to delete.

Press the “Delete” icon.



RAIL20PLM1113AA 24

The “Delete Product Mix” window appears.



Press the “Delete” button **(1)** to confirm the deletion and close the “Delete Product Mix” window.

Press the “Cancel” button **(2)** to cancel the deletion and close the “Delete Product Mix” window.

RAIL18PLM1311BA 25

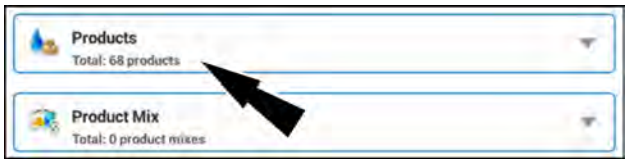
Create a product

A product is defined as a single ingredient that can be used to create product mixtures. Each product must be defined at the individual level before you can create a product mixture. For ease of product mixture creation, you can create the individual products while in the “Add Product Mixture” window.

Products are created from the ”Product Library” screen within the “Data Management” card.

To create a product:

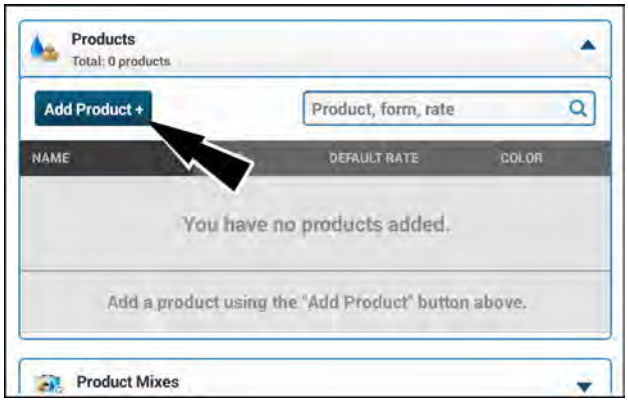
- Press the “Products” drop-down menu to access the product list.



RAIL20PLM1017AA 1

The list of defined products is shown.

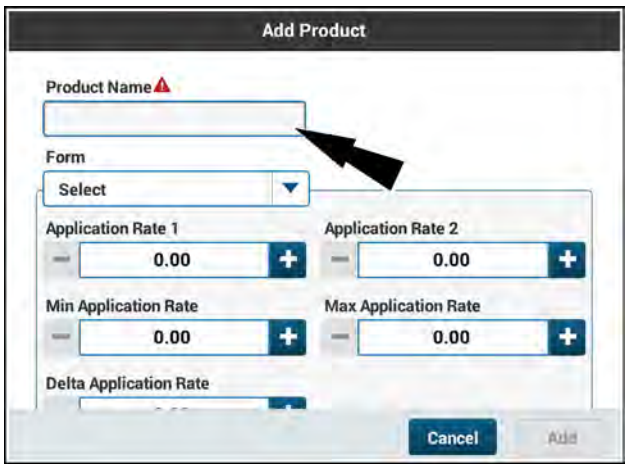
- Press the “Add Product +” button to define a new product.



NHIL20PLM0045AA 2

- Define the product information.

Press the “Product Name” field to define the product name. Upon pressing, the keypad appears.



NHIL20PLM0046AA 3

Press the “Form” drop-down menu to define the product form. A pre-populated list appears.

The available forms are:

- Granular/Other
- Liquid

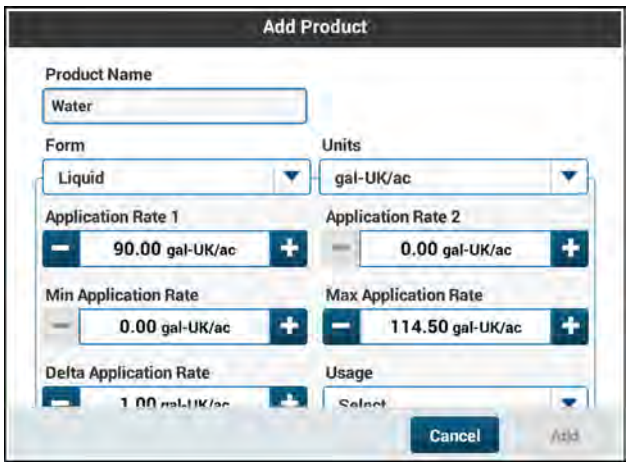
The selection of Anhydrous, Granular/Other, or Liquid causes an additional selection for “Usage” to appear.

RAPH22PLM0927BA 4

Long press the window for each application rate setting to change the value. Each product can have two application rates defined, as well as a minimum application rate and a maximum application rate.

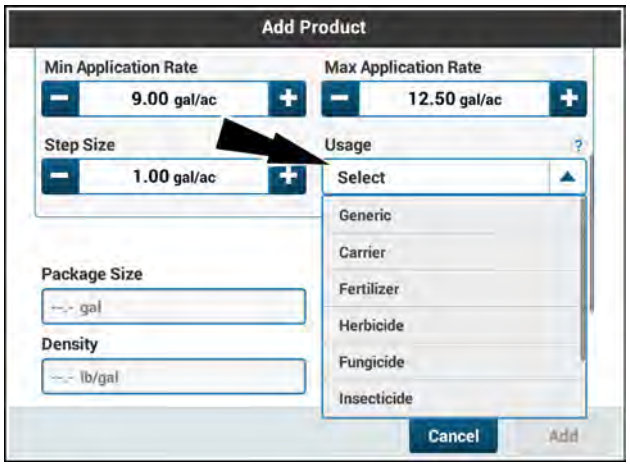
- The “Application Rate 1” value is the normal or recommended application rate for the product. This is the application rate that is used by default when the product is assigned to a controller.
- The “Application Rate 2” value allows you to define an additional rate to quickly switch targets rates from the rate control windows on a run screen.
- The “Min Application Rate” value is the lowest application rate for the product if the controller is turned on and applying product
- The “Max Application Rate” value is the highest application rate for the product if the controller is turned on and applying product.

  NOTE: *The maximum application rate is automatically calculated at* ***125%*** *of the highest rate between Rate 1, Rate 2, and the minimum application rate.*
- The “Delta Application Rate” is the step value by which you increase or decrease the target rate of the product. You can adjust the target rate from the “Add Product” screen, or from the rate control windows on a run screen while applying product in the field.



RAIL19PLM0649BA 5

If the “Form” selection is Granular/Other or Liquid, select the product usage from the “Usage” menu.



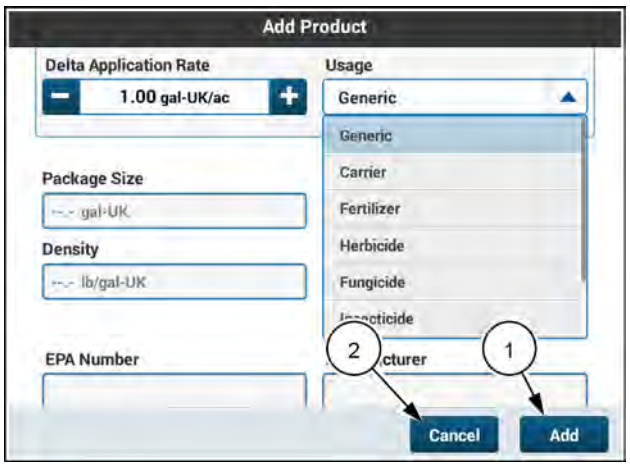
RAPH23PLM1250BA 6

If desired, define the remaining optional selection fields. Scroll down to see all of the options.

After all of the required selection fields are satisfied, the “Add” button activates.

Press the “Add” button **(1)** to save your changes and close the “Add Product” window.

Press the “Cancel” button **(2)** to discard your changes and close the “Add Product” window.



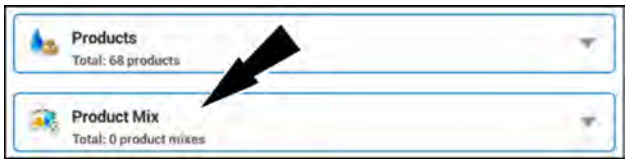
RAIL19PLM0651BA 7

Create a product mix

A product mixture is a combination of at least two individually-defined products. Before you create the product mix, you must create the second product, or ingredient, of the product mixture. This can be done either on the product creation screen or on the product mix creation screen.

Product mixes are created from the ”Product Library” screen within the “Data Management” card.

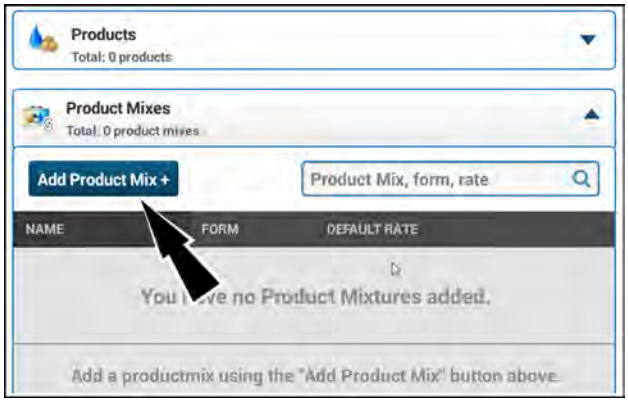
Press the “Product Mix” drop-down menu to access the product mix list.



RAIL20PLM1017AA 1

The list of defined product mixes is shown.

Press the “Add Product Mix +” button to define a new product mix.

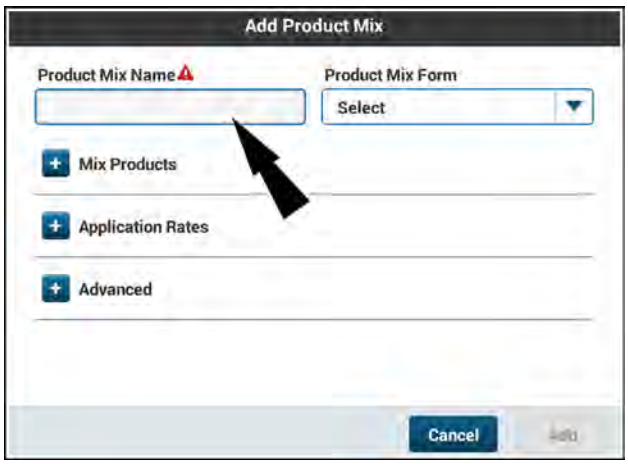


RAIL20PLM1024AA 2

Define the product mix information.

Press the “Product Mix Name” field to define the product mix name. Upon pressing, the keypad appears.

Enter the desired product mix name.

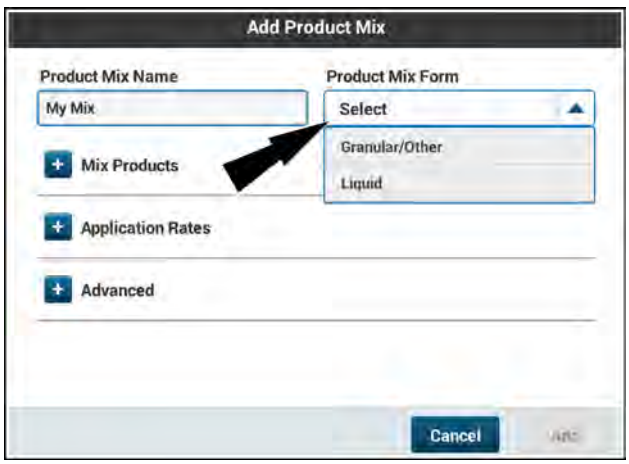


RAIL19PLM0652BA 3

Press the “Product Mix Form” drop-down menu to define the product mix form. A pre-populated list appears for you to choose the product mix form from.

The available forms are:

- Granular/Other
- Liquid

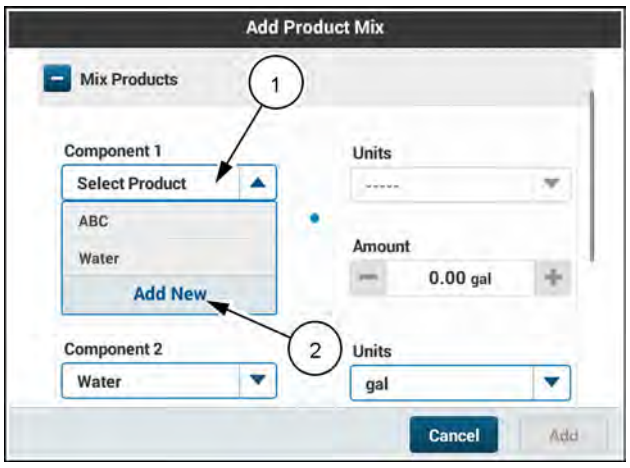


RAIL19PLM0653BA 4

Press the “Mix Products” drop-down menu, and then select your product mix ingredients.

Press the ”Component 1” drop-down menu **(1)** to select the carrier in the product mix. The “Carrier” field populates from a list of previously-defined individual products.

To create a new product within the “Add Product Mix” window, press the “Add New” selection **(2)**.



RAPH23PLM1221BA 5

The unit of measurement selection will populate when you select your “Component 1” product. Select the correct unit of measurement **(1)** for your application.

Define the amount (in this instance, total volume) of your carrier **(2)**.

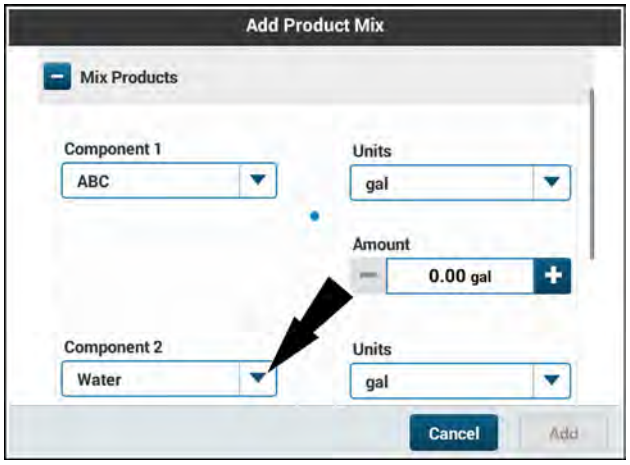
RAPH23PLM1220BA 6

Scroll down on the screen and define your component.

Press the “Component 2” drop-down menu to select the next component in the product mix. The “Component 2” field populates from a list of previously-defined individual products.

To create a new product within the “Add Product Mix” window, press the “Add New” selection.

Define the units of measurement and the amount as in “Component 1.”



RAPH23PLM1222BA 7

Scroll down on the screen and press the “Application Rates” drop-down menu and define your product mix application rates.

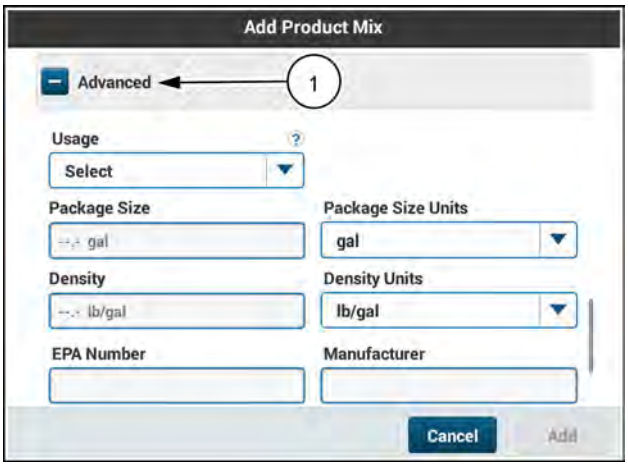
Press the window for each application rate setting. Each product can have two application rates defined, as well as a minimum application rate and a maximum application rate.

RAPH23PLM1223BA 8

After you define your application rates and product amount, a summary displays for your application rates per product.

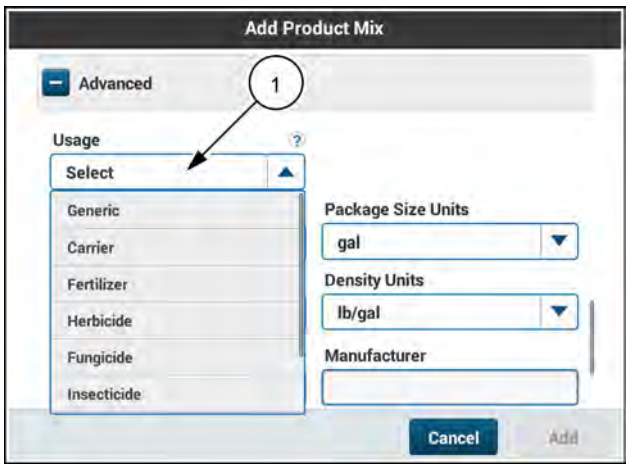
RAPH23PLM1224BA 9

Scroll down on the screen and press the “Advanced” drop-down menu **(1)**. Define the advanced product mix parameters.



RAPH23PLM1225BA 10

Define the product usage **(1)**. The available options are “Generic”, “Carrier,” “Fertilizer,” “Herbicide,” “Fungicide,” “Insecticide,” “Pesticide,” or “Seed Plant.”

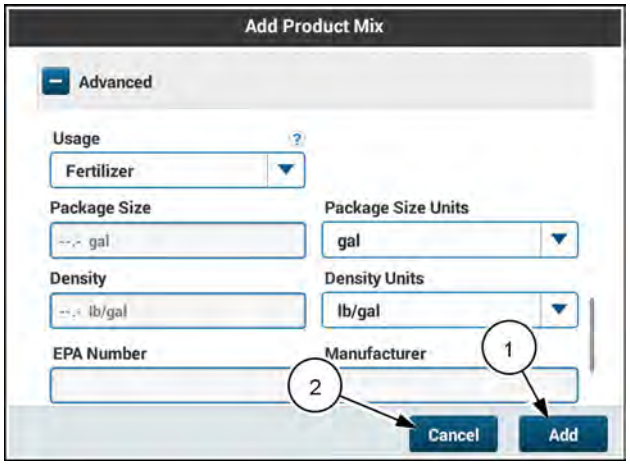


RAPH23PLM1226BA 11

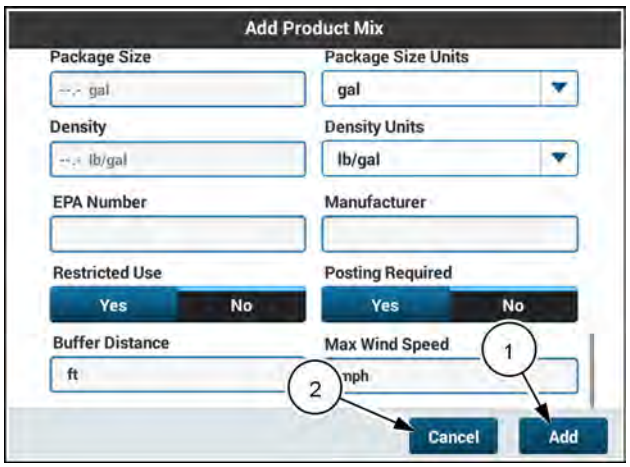
If desired, define the remaining optional selection fields.

After all of the required selection fields are satisfied, the "Add” button activates. Press the add button **(1)** to create the product mix.

Press the cancel button **(2)** to return to the “Product Library” screen without creating a new product mix.



RAPH23PLM1227BA 12



RAPH23PLM1228BA 13

Transferring documents and videos to the display

You can transfer documents and videos to your display using the CASE IH - recommended USB device, part number 47962967 (4 GB) or 90484784 (64 GB). You normally obtain documents and videos that you transfer to your display from the MyCaseIH portal, or from your CASE IH dealer.

Documents must be Portable Document Format (*.pdf) files.

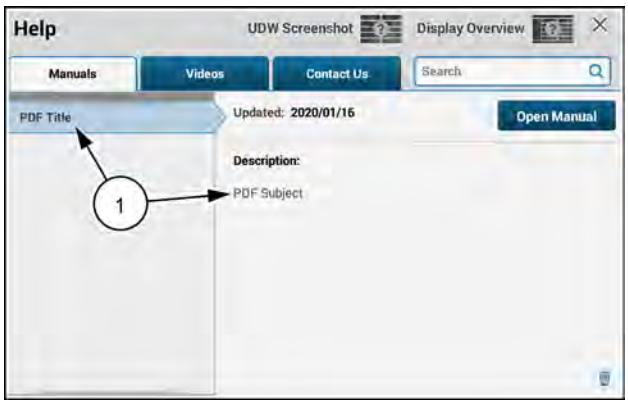
Videos must be Matroska Video (*.mkv) files.

Video files must meet the following specifications:

- The aspect rati of the source video is 16:9
- Matroska Video (MKV) encoding
- 24 frames per second
- Constant frame encoding
- VP8 video codec
- Vorbis audio codec
- Width is 1004 pixel resolution
- Height is 590 pixel resolution

Preparing a PDF file

Before you insert the USB device into the display, access the Portable Document Format (*.pdf) document properties and confirm that the "PDF title" and "PDF Subject" metadata fields are populated. If not, define the fields before you transfer the Portable Document Format (*.pdf) file to the display. These fields **(1)** populate on the "Manuals and Videos" screen and allow you to identify the file on the display.



RAPH23PLM0448AA 1

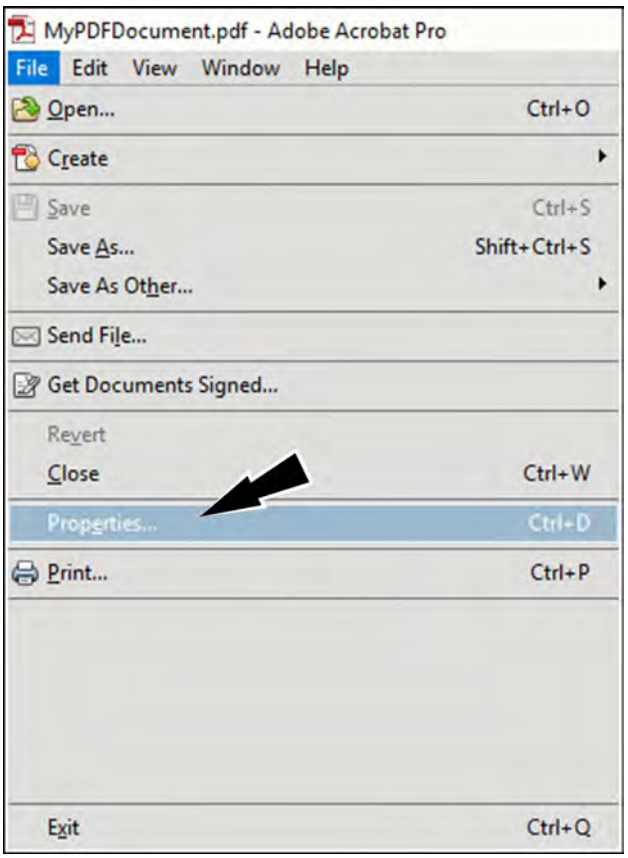
To see the metadata fields in your Portable Document Format (*.pdf) document, open the “File” menu and choose the “Properties” menu item,

To confirm that the meta data fields are populated on your file:

1. Open the PDF file with a suitable PDF editor.

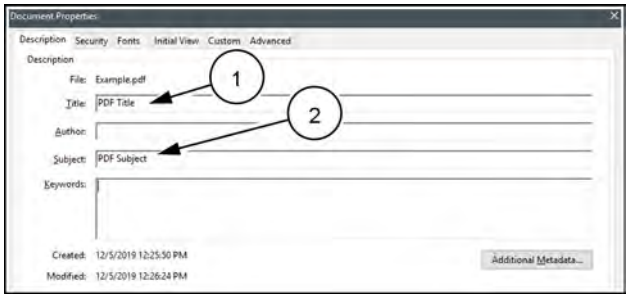
   NOTE: *The figures show editing the meta data fields with* ***Adobe® Acrobat®****.*

2. Open the "File" menu and select the "Properties" menu item.



RAIL20PLM1504BA 2

3. Enter the desired title **(1)** and subject **(2)** into the “Document Properties” window.
4. Click the “OK” button.



RAIL20PLM1031AA 3

The “Document Properties” window closes. The metadata information appears in the display after you import the file into the display and select it in the “Manuals” tab.

NOTE: *The information you enter into the “Subject” field in the “Document Properties” window appears in the “Description” area in the display.*

Prepare the USB device

To transfer a document, use a computer to add a folder named “ Documents” to the USB device.

To transfer a video, use a computer to add a folder named “ Videos” to the USB device.

Copy document (*.pdf) files into the “Documents” folder.

Copy video (*.mkv) files into the “Videos” folder.

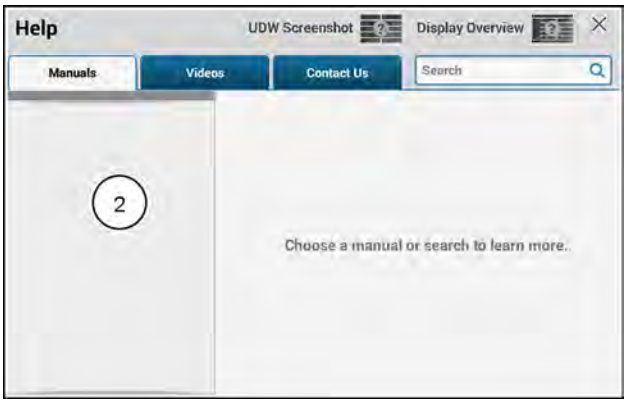
RAIL19PLM0160AA 4

Transfer the files to the display

Press the “Help” (?) button **(1)** on the top bar of the display. The “Help” screen **(2)** opens.

NHIL20PLM0846AA 5

Insert the USB device with the document or video file into the USB port in the display. A “USB Device Detected” window appears.

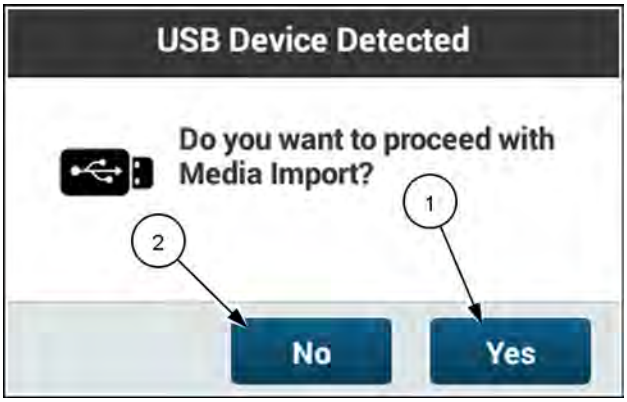


RAPH23PLM0449AA 6

The “USB Device Detected” window asks, “Do you want to proceed with the media import?”

Press the “Yes” button **(1)** to proceed with the media import.

Press the “No” button **(2)** to cancel the media import and close the “USB Device Detected” window.

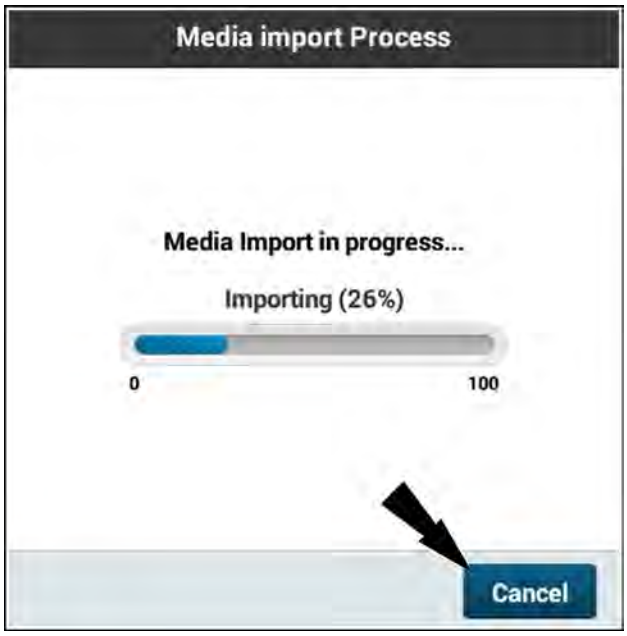


RAIL19PLM0162AA 7

While the import is in progress, a “Media Import Process” window appears with a progress bar.

You can cancel an import that is in progress.

Press the “Cancel” button to close the media import.



RAIL19PLM0626BA 8

If you cancel an import, a “Media Import Summary” window appears listing the cancelled files.

Press the “OK” button to acknowledge the error message and close the “Media Import Summary” window.

RAIL19PLM0625BA 9

After importing the files, the display software validates the import by comparing the imported data to the data on the USB device. You cannot interact with this window.

RAIL19PLM0627BA 10

When an import finishes, a “Media Import Summary” window appears.

The “Media Import Summary” window provides the status of the import, and information about the import file. The available memory space for media files also appears.

Press the “OK” button to close the “Media Import Summary” window.

RAIL19PLM0623BA 11

If the import finishes but with errors, the “Media Import Summary” window appears listing the files that were not imported.

Press the “OK” button to close the “Media Import Summary” window.

RAIL19PLM0625BA 12

If the import fails and aborts before completion, a “Media Import Aborted” screen appears and provides information about the failure.

Press the “OK” button to close the “Media Import Summary” window.

RAIL19PLM0624BA 13

The following import errors can occur:

Error message	Error condition	Additional displayed data
Copy not attempted – not enough memory available	The import cannot be performed because there is not enough memory in the display.	The amount of free space available appears.
No media present on the USB storage device. Note: PDF documents should reside in the /documents folder and videos (.mkv) should reside in the /videos folder.	There is no media present on the USB device.	None
Mismatch between checksum file and the media file(s) present on the USB device	The media file imported to the display does not match the file in the USB device. This indicates a faulty import.	None
Media import could not be completed because the USB drive format must be FAT	The USB device is formatted to a standard other than FAT.	None

While the USB memory device is inserted into the display, the “Manuals” and “Videos” tabs list the files both in the USB memory device and the display. This results in some items appearing to be listed twice.

RAPH23PLM0450AA 14

Remove the USB memory device from the display. The duplicate listed files that are in the USB memory device are removed from the tabs in the display. Only the files in the display memory remain in the “Manuals” and “Videos” tabs.

RAPH23PLM0451AA 15

Delete unneeded files from the display

NOTE: *Your display provides **2 GB** of memory space for manuals and videos. This is ample memory space for typical work operations. However, it is a good practice to remove unneeded content from your display memory.*

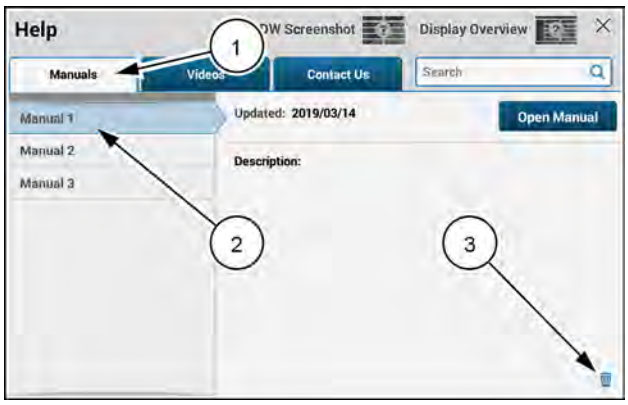
NOTE: *You must be an administrative user of the display to delete media files.*

To delete a file, press to select the “Manuals” or “Videos” tab **(1)** that contains the file.

Press to select the file **(2)**.

Press the “Delete” icon **(3)**.

NOTE: *The “Delete” icon does not appear if the USB memory device is inserted into the display.*



RAPH23PLM0451AA 16

A “Confirm Delete” window appears.

NOTE: *Pressing the “Delete” button deletes only the selected file. There is no way to delete more than one file at a time.*

NOTE: *There is no display operation that deletes manual and video files that are on the USB memory device. When a file is listed twice, you can press to select either instance of the file appearing in the list. However, only the file in the display memory will be deleted.*

Press the “Delete” button **(1)** to continue the file deletion.

Press the “Cancel” button **(2)** to close the “Confirm Delete” window and cancel the file deletion.

RAIL19PLM0165AA 17

8 - SOFTWARE MANAGEMENT

Software updates

Your display, if equipped with a cellular modem and the telematics subscription, is capable of receiving automatic notifications when a software update is available. Upon initial power up after the software update is available, a pop-up screen will open.

The software updates are managed through the “Update Manager” application.

NOTICE: Before performing a software update, all data (including task data) should be exported from the display to a USB memory device. In the case of a failed software update, the data can be imported back into the display for operation.

NOTE: *The Update Manager application updates software in the display and the Processing and Connectivity Module (PCM) controllers only. Use the Remote Assistance Services application or contact your CASE IH dealer to perform software updates to the vehicle controllers. See “Remote assistance service” (**6-67**) for more information on updating the vehicle controllers.*

NOTE: *You cannot use a software update to convert an **Pro 1200** display to an **Pro 700** Plus display. You also cannot use a software update to convert an **Pro 700** Plus display to an **Pro 1200** display. The hardware appears similar between the two display models, but internal differences prevent conversion.*

Update Manager application

You can initiate a software download or installation any time, using the Update Manager application.

Press the applications button on the top bar of the display.

The “Applications” screen opens.

Press the “Update Manager” button.

The “Update Manager” window opens.

The “Update Manager” screen displays information about the current status of your software versions. If any action is possible, additional buttons will appear on the “Update Manager” screen.

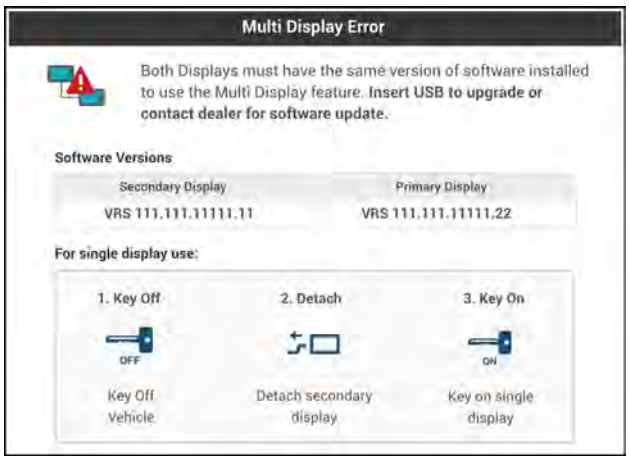
RAPH21PLM1246AA 1

RAIL18PLM0248AA 2

Dual displays

When the vehicle has dual displays, the software versions in the displays must be compatible. If the system detects incompatible software versions in the displays, it prompts you for a software update.

When incompatible software versions are detected by the system, and you need to use it immediately, you will be prompted by the system to electrically disconnect the secondary display.



RAPH22PLM0919BA 3

Downloading software

Update notification

When a software update is available for download, a “Software Update Available” window appears after you turn the vehicle key to the ON position.

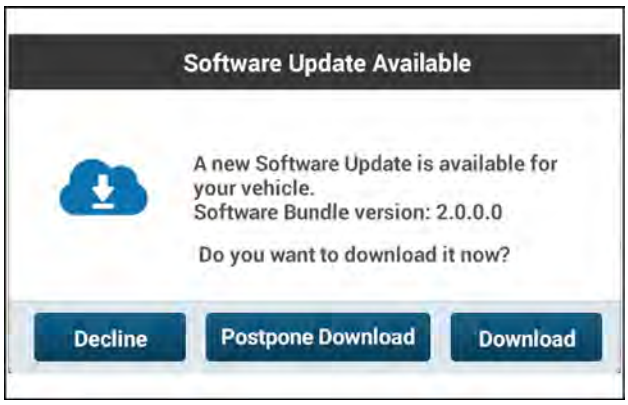
NOTE: *In vehicles with dual displays, over the air software installations can be initiated only in the primary display.*

The “Software Update Available” window allows you to proceed with three options:

- Decline – Refuse the software update and retain the current software version.

  NOTE: *If you decline the update, you must contact your dealer to have the software package installed at a later time.*

- Postpone Download – Close the pop-up window and delay the software update for a defined amount of time.
- Download – Accept the software update; the software package will download via your wireless connection.



NHIL18PLM0094AA 1

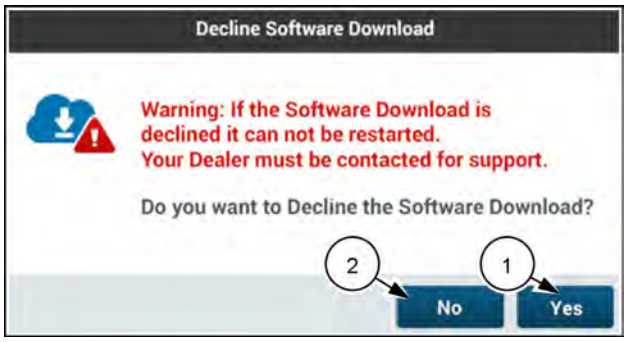
Decline software download

If you press the “Decline” button in the “Software Update Available” window, the system does not download the available update. You must contact your CASE IH dealer to later download and install this update.

NOTE: *Software downloads provide new features and improvements to your display and farming system.*

A “Decline Software Download” window appears prompting you for confirmation.

The message reads, “ Warning: If the software download is declined it cannot be restarted. Contact your dealer for support. Do you want to decline the software download?”



RAIL18PLM0242AA 2

Press the “Yes” button **(1)** to decline the software download and close the ”Decline Software Download” window.

Press the “No” button **(2)** to close the “Decline Software Download” window and return to the “Software Update Available” window.

Postpone software download

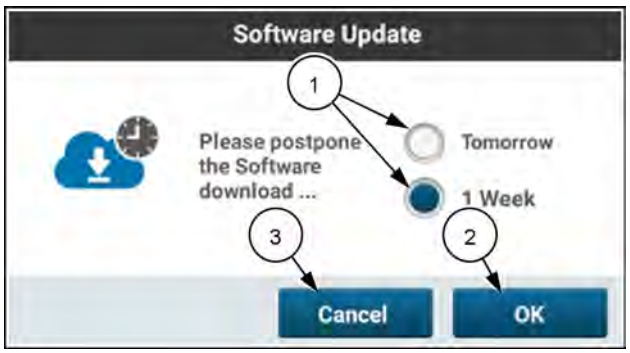
If you press the “Postpone Download” button in the “Software Update Available” window, you can postpone the download for a day or a week. This feature is useful for when you wish to keep your software updated, but the vehicle or operator are currently busy.

NOTE: *It is possible to download software while the vehicle is working, but in some situations an active download can slightly slow the operation of the display.*

Press a radio button **(1)** to select the postponement option.

Press the “OK” button **(2)** to accept your postponement option and close the “Software Update” window.

Press the “Cancel” button **(3)** to close the “Software Update” window and return to the “Software Update Available” window without postponing the update.



RAIL18PLM0243AA 3

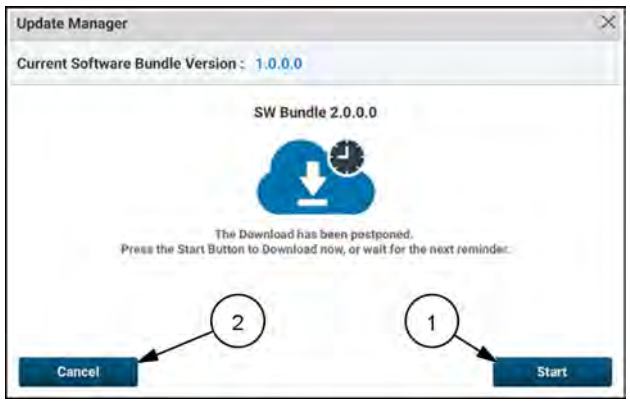
The Update Manager application appears.

The Update Manager application indicates that you postponed the download.

Press the “Start” button **(1)** to perform the download now.

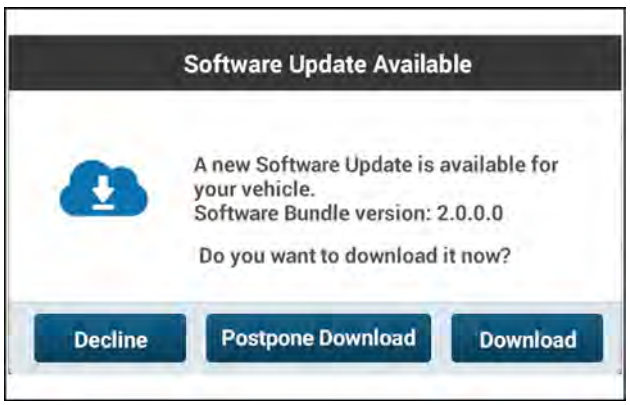
Press the “Cancel” button **(2)** to close the “Update Manager” window and postpone the download.

NOTE: *You can perform the download before the selected postponement period by using the Update Manager application to open this window.*



RAIL18PLM0244AA 4

The first time the vehicle key is turned to the ON position after the end of the selected postponement period, the “Software Update Available” window will appear again.



NHIL18PLM0094AA 5

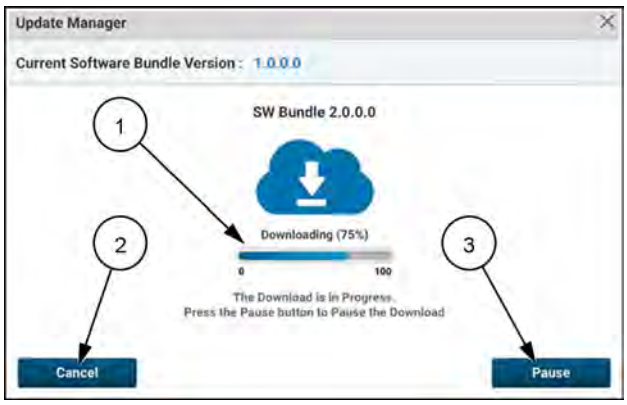
Start software download

If you press the “Download” button in the “Software Update Available” window, the Update Manager application appears. The download begins.

The “Update Manager” window gives the progress **(1)** of the download.

Press the “Cancel” button **(2)** if you wish to cancel the download. You can cancel or pause a download in the Update Manager application any time before the progress bar reaches 100 percent.

Press the “Pause” button **(3)** if you wish to pause the download.



RAIL18PLM0245AA 6

Cancelled download

If you press the “Cancel” button in the Update Manager application, the download stops.

The “Cancel Software Download” window appears.

RAIL18PLM0246AA 7

Press the “Yes” button **(1)** to cancel the software download and close the ”Cancel Software Download” window.

Press the “No” button **(2)** to close the “Cancel Software Download” window and return to the Update Manager application.

NOTE: *If you cancel a download that is partially completed, the system will attempt to retain data that you have already downloaded. The next time you start a download of the same update, the system will download only that data you have not already downloaded.*

Paused download

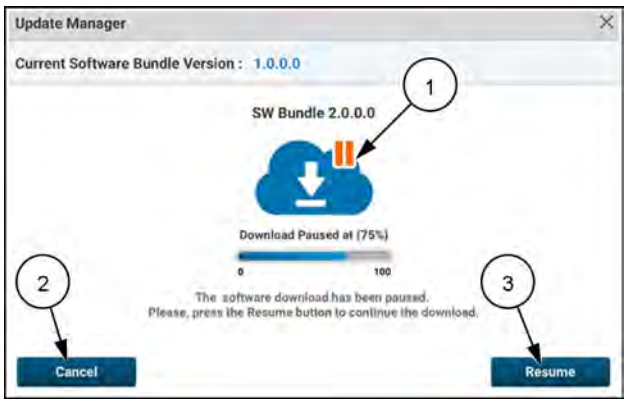
If you press the “Pause” button in the Update Manager application, the download pauses.

The Update Manager application indicates **(1)** that the download is paused.

Press the “Cancel” button **(2)** if you wish to cancel the download.

Press the “Resume” button **(3)** if you wish to resume the download.

NOTE: *If you cancel a download that is partially completed, the system will attempt to retain data that you have already downloaded. The next time you start a download of the same update, the system will download only that data you have not already downloaded.*



RAIL18PLM0247AA 8

Error during download

In the unlikely event of a problem during a download, the Update Manager application aborts the download. The “Update Manager” window states what happened and provides instructions **(1)**.

Press the “Cancel” button **(2)** to close the “Update Manager” window after following the instructions provided by the Update Manager application.

RAIL18PLM0249AA 9

Download complete

At the completion of a successful download, the Update Manager application provides you the option to install the software, or to cancel the installation.

If you cancel the installation, the downloaded software will be available for installation later.

Press the “Continue” button **(1)** to proceed with the software installation.

Press the “Cancel” button **(2)** if you wish to cancel the installation.

RAIL18PLM0250AA 10

Installing downloaded software

Update Manager application

RAPH21PLM1246AA 1

You can initiate a software download or installation any time, using the Update Manager application.

NOTE: *If your vehicle has dual displays, the software will update simultaneously. However, the update manager will only be available on the primary display.*

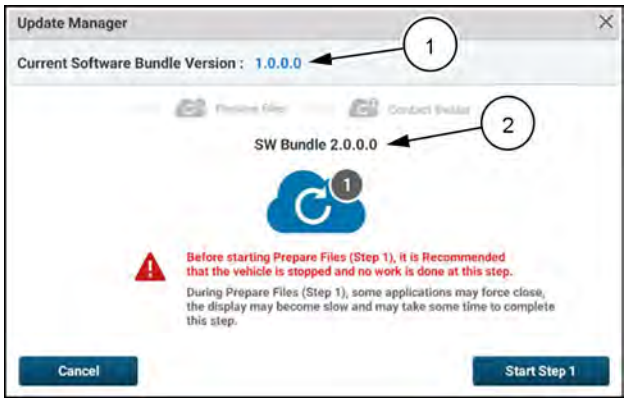
Press the “Applications” icon in the top row of any display screen.

The “Applications” screen opens.

Press the “Update Manager” icon.

An “Update Manager” window opens.

If there is an update downloaded and ready to install, the Update Manager application shows you the currently installed software version **(1)**, and the downloaded software version **(2)**.



RAIL18PLM0251AA 2

The installation process is a two-step process. Step 2 of the process includes contacting your CASE IH dealer.

During the step in which you contact your CASE IH dealer, you use the Remote Assistance Service (RAS) to coordinate the download with your dealer. See “Remote assistance service” (**6-67**) for instructions on using the RAS.

Cancelled installation

RAIL18PLM0251AA 3

In every step of the installation process, the “Update Manager” window includes a “Cancel” button.

NOTE: *Pressing the “Cancel” button in an “Update Manager” window brings up a window that prompts you to either proceed with the cancellation or to stop the cancellation.*

If you cancel an installation, you will need to contact your CASE IH dealer if you wish to install the update later.

To cancel an installation during any step of the installation process, press the “Cancel” button in the “Update Manager” window.

The “Cancel Software Installation” window opens.

Press the “No” button **(1)** to stop the cancellation and close the ”Cancel Software Installation” window.

Press the “Yes” button **(2)** to close the “Cancel Software Installation” window and cancel the installation.

RAIL18PLM0252AA 4

Step 1 – Prepare files

Step 1 prepares the downloaded data for installation into your display and PCM controller.

Review the instructions **(1)** in the “Update Manager” window.

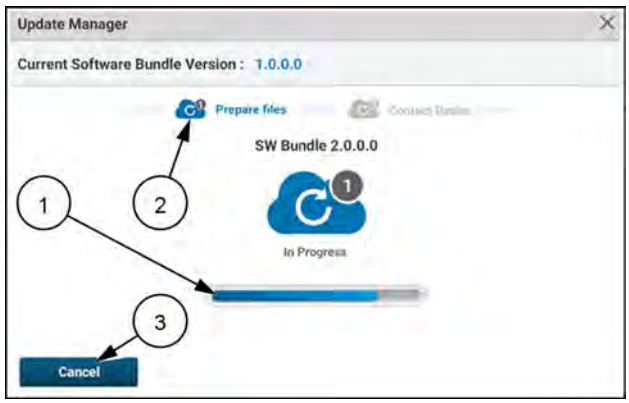
Press the “Start Step 1” button **(2)** to begin step 1 of the installation process.

Press the “Cancel” button **(3)** if you wish to cancel the installation.

RAIL18PLM0251AA 5

The “Update Manager” windows shows you a progress bar **(1)** and indicates that you are on Step 1 **(2)**.

Press the “Cancel” button **(3)** before the progress bar reaches 100 percent if you wish to cancel the installation.



RAIL18PLM0253AA 6

Step 2 – Contact dealer

When Step 1 successfully finishes, the “Update Manager” window proceeds immediately to Step 2 **(1)**.

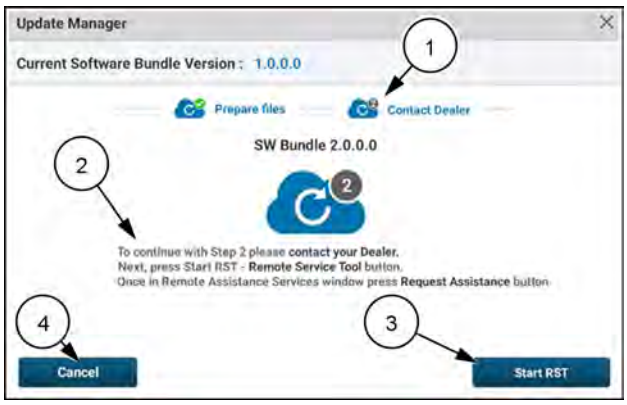
Follow the instructions **(2)** given in the “Update Manager” window.

The first instruction is to contact your dealer. Arrange a Remote Access Services (RAS) session with your dealer.

When your dealer is ready to support the RAS session, press the “Start RST” button **(3)** to proceed with the software installation. See “Remote assistance service” (**6-67**) for instructions on using the RAS.

Your dealer will remotely perform a procedure that configures your system for the next step of the installation process.

Press the “Cancel” button **(4)** if you wish to cancel the installation.



RAIL18PLM0254AA 7

After the RAS session with your dealer is complete, press the “Applications” icon in the top row of any display screen.

Press the “Update Manager” icon. The “Update Manager” window opens.

RAPH21PLM1246AA 8

The “Update Manager” window indicates that you have successfully completed Step 2 **(1)**.

Press the “Continue” button **(2)** to proceed with the installation. The “APK Bundle Installer” window opens.

Press the “Cancel” button **(3)** if you wish to cancel the installation.

RAIL18PLM0255AA 9

The “Software Bundler Installer” window provides options for the software installation.

- Factory data reset
- Complete reinstall

The factory data reset option permanently deletes all users and saved data, settings, and configurations in the system during the installation process. The deleted data includes but is not limited to imported prescriptions, agronomic data, and vehicle/implement settings. This setting is only recommended when a clean display is required, such as for a vehicle that is traded in or when troubleshooting data corruption issues. Make sure that you save all user data to a USB stick before performing a factory data reset.

NOTE: *The factory data reset does not delete display activations, but does delete telematics subscriptions. After a factory data reset, the subscriptions must be re-sent through the Vehicle Management System (VMS).*

The complete reinstall option will install all software components, including software that is already installed in the system. The complete reinstall option will increase the software installation time and is not usually necessary during a typical USB or OTA software update, unless directed by qualified support personnel.

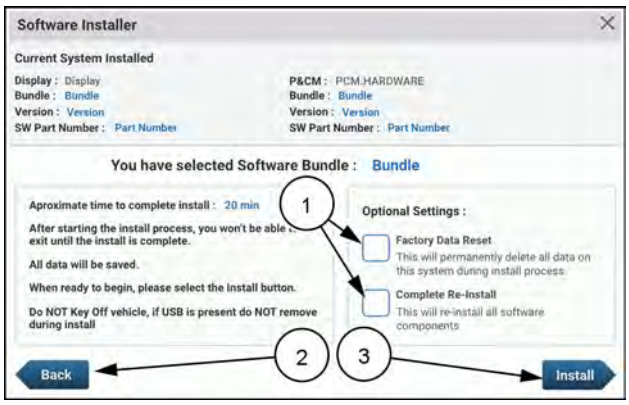
NOTE: *The complete reinstall option will not have any negative impact on the operation of the vehicle or components, and all user data will be preserved.*

Press the check boxes **(1)** to select or deselect the installation options.

Press the “Back” button **(2)** to open the previous screen.

Press the “Install” button **(3)** to begin the software installation.

Follow any instructions that appear during the installation.



NHIL20PLM0486AA 10

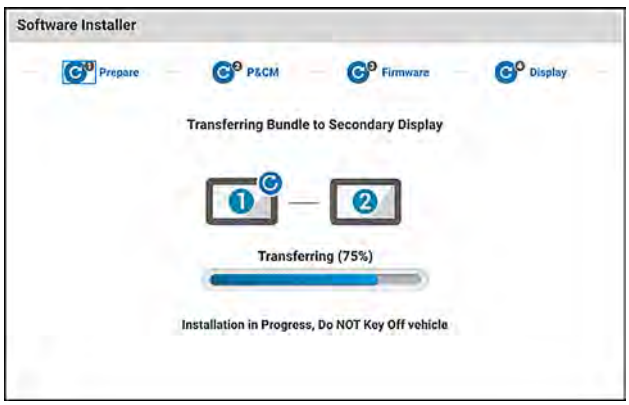
Dual display programming

NOTE: *Over the air installations can only be initiated in the primary display. However, you can update both displays simultaneously. The prompts in the displays guide you through the procedure.*

NOTE: *Fault and status histories are still available in the secondary display during an installation. Fault popups remain enabled.*

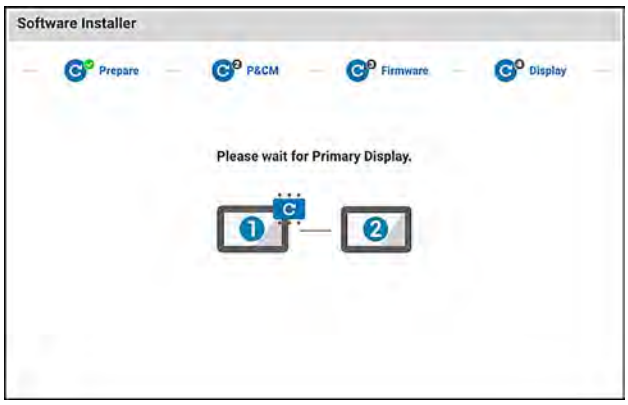
NOTE: *During the installation, the secondary display ignores the insertion of a USB memory device that contains a GHMI folder. The memory device lockout is reset after a key cycle.*

Follow any instructions that appear in the displays.



RAPH22PLM1663AA 11

While the first display to be updated is updating, the other display instructs you to wait. You cannot interact with this screen.



RAPH22PLM1664AA 12

After one of the displays has finished updating, the process begins updating the second display. Do not turn the vehicle key OFF during this process.

RAPH22PLM1667AA 13

Installing software with a USB device

NOTICE: Before performing a software update, all data (including task data) should be exported from the display to a USB memory device. In the case of a failed software update, the data can be imported back into the display for operation.

NOTE: *Use only the CASE IH - approved 47962967 (* ***4 GB****) USB memory device part number to program the display and PCM.*

NOTE: *To avoid memory conflicts or loss of data, it is recommended to delete all manuals from the display before performing a software update.*

NOTE: *While most data persists on the display after a software update, task data does not when updating from version 1.x.0.0 to 2.x.0.0. New tasks will need to be created for any given grower/farm/field before logging coverage and as-applied data.*

One option for installing software updates is to use a Universal Serial Bus (USB) device with the software on it.

In most situations, you can download the software through the on-board cellular modem and coordinate an installation with your CASE IH dealer. If you are located in an area with poor cellular reception, you can install software updates using a memory device.

NOTE: *If your vehicle is equipped with dual displays, both displays will update simultaneously.*

NOTE: *Over-The-Air (OTA) software downloading requires a AFS Connect telematics subscription. Consult your CASE IH dealer to obtain this subscription.*

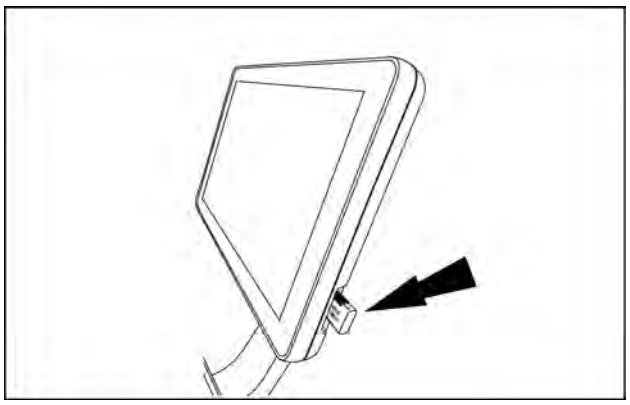
Obtain a USB device with the needed software from your CASE IH dealer.

NOTE: *In some instances, the display may still recognize a software bundle if the USB device is inserted after the display is booted. It is always recommended to perform the software installation using the process outlined below.*

NOTE: *This display will only initiate a software installation if you insert the USB device first and then turn the vehicle key to the ON position.*

NOTE: *All controllers must be in a powered down state before beginning the process below. If the key is currently on or just turned off, wait for the audible click from the battery isolator indicating that is has opened before keying back on.*

Insert the USB memory device into the port on the right-hand edge of the display. If the vehicle is equipped with dual displays, insert the USB memory device into the primary display. The secondary display updates automatically during the software update process.



RAIL18PLM0260AA 1

Turn the vehicle key to the ON position.

A firmware installation should automatically start after the display boots. Allow the firmware installation to complete.

NOTE: *Do not remove the USB memory device during this process.*

NHPH24PLM0600AA 2

After the firmware installation is complete, the display will appear to boot as normal.

Allow the display to fully complete the boot process.

NHPH24PLM0412AA 3

With the USB memory device still inserted in the display, a “Software Bundle(s) available” pop up window displays.

If you do not wish to see the “Software Bundles Available” window in future USB software installations, check the check box **(1)**.

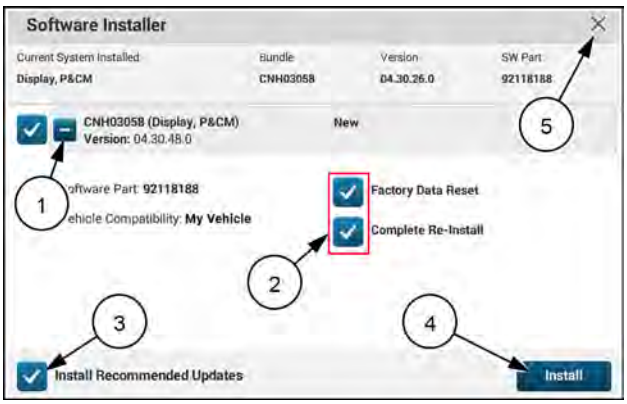
Press the “Yes” button **(2)** to begin installing the software. The ‘Software Bundle Installer” window appears.

Press the “No” button **(3)** to close the “Software Bundles Available” window without installing the software. You can continue to use the USB device if there is other farming data on it.

RAIL18PLM0257AA 4

The “Software Installer” window provides information about the currently installed software in the display, and about the software in the USB device.

Press the “Expand” and “Collapse” buttons **(1)** to see or hide additional information about the software on the USB device, and additional installation controls.



RAPH23PLM0553AA 5

Press the applicable check box **(2)** if you wish to perform a factory data reset, or a complete reinstallation of the software without deleting user data.

NOTE: *It is recommended to always select “Complete Re-Install”. Select “Factory Data Reset” only if you have had specific issues with the display.*

If you wish to install only recommended updates, press the applicable check box. **(3)**

Press the “Install” button **(4)** to proceed with the installation.

Press the “X” button **(5)** at any time to cancel the installation.

NOTE: *In some cases a factory data reset is mandatory and the option is not available. In that case the check mark buttons appear inactive.*

The factory data reset option permanently deletes all users and saved data, settings, and configurations in the system during the installation process. The deleted data includes but is not limited to imported prescriptions, agronomic data, and vehicle/implement settings. This setting is only recommended when a clean display is required, such as for a

vehicle that is traded in or when troubleshooting data corruption issues. Make sure that you save all user data to a USB stick before performing a factory data reset.

NOTE: *The factory data reset does not delete display activations, but does delete telematics subscriptions. After a factory data reset, the subscriptions must be re-sent through the Vehicle Management System (VMS).*

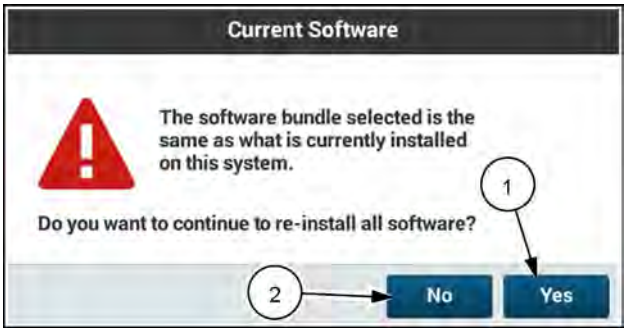
The complete reinstall option will install all software components, including software that is already installed in the system. The complete reinstall option will increase the software installation time and is not usually necessary during a typical USB or OTA software update, unless directed by qualified support personnel.

NOTE: *The complete reinstall option will not have any negative impact on the operation of the vehicle or components, and all user data will be preserved.*

If you install the same version of software that is already installed in the display, a “Current Software” window appears. You have options to continue the installation or to stop the installation.

Press the “Yes” button **(1)** to continue the installation of the same software version that is already installed.

Press the “No” button **(2)** to stop the installation and close the “Current Software” window.



RAIL18PLM0259AA 6

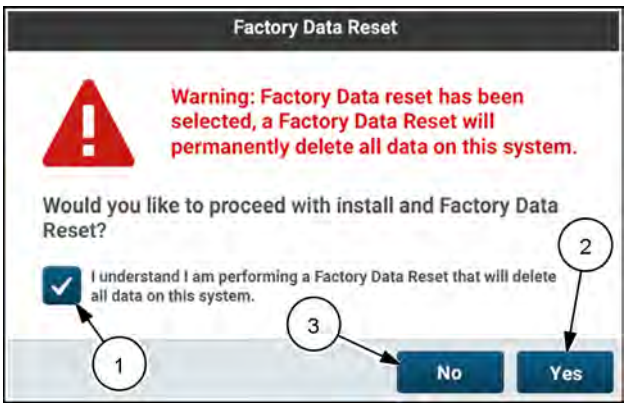
If you choose to perform a factory data reset, a warning window appears.

The warning reads, “Warning: Factory data reset has been selected. A factory data reset will permanently delete all data on this system.”

Press to check the check box **(1)** to acknowledge that you wish to perform a factory data reset on the system.

Press the “Yes” button **(2)** to complete the factory data reset.

Press the “No” button **(3)** to cancel the factory data reset.

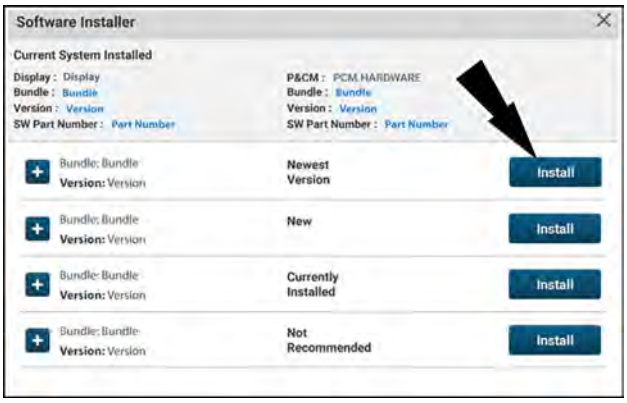


RAIL18PLM1401BA 7

If the USB device has more than one installation file on it, the installation files appear listed with recommendations.

You normally install the most recently released software for the affected vehicle.

Press the applicable “Install” button to select the desired software bundle.



RAIL18PLM0262AA 8

Software installations occur in a series of up to four steps. The “Software Bundle Installer” window lists the steps on the screen and provides you any relevant information and instructions. Green check marks appear on the icons as the installation process completes each step.

Follow any instructions that appear in the “Software Bundle Installer” window.

NOTE: *Do not remove the USB device unless prompted to do so by instructions that appear in the display.*

RAIL19PLM0136AA 9

Software preparation

The system needs to prepare for the software installation.

PCM software installation

Many software updates will include an update to the PCM controller software. The PCM controller manages the autoguidance and other system applications. Applications vary between vehicle types.

The procedure usually occurs without operator intervention. However if any instructions appear on the display, carefully review and follow them.

Firmware installation

In many cases a software installation also installs device firmware. Device firmware is software that operates electronic devices such as your display and the PCM controller.

NOTE: *Do not remove the USB device or turn the key off, unless prompted by the display.*

Carefully review and follow any instructions that appear on the display.

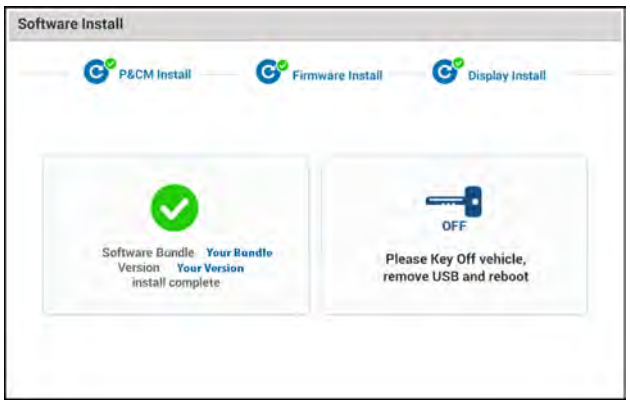
RAIL19PLM0137AA 10

Display software installation

Many software updates will include an update to the display software.

The procedure usually occurs without operator intervention. However if any instructions appear on the display, carefully review and follow them.

If the vehicle is equipped with dual displays, after one of the displays has finished updating the process begins updating the second display. Do not turn the vehicle key OFF during this process.



RAIL19PLM0138AA 11

After updating display software, check with your CASE IH dealer regarding software updates to other vehicle controllers. CASE IH advises updating all vehicle controllers to the latest software after performing a display software update.

Once all software updates are complete, perform vehicle guidance calibrations (steering angle sensor, steering valve, and roll calibrations) as per the instructions in the vehicle operator's manual and this software operating guide.

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Dealer's stamp

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Availability of some models and equipment builds varies according to the country in which the equipment is being used. For exact information about any particular product, please consult your Case IH dealer.

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